Jesuit-Krauss-McCormick Library
BL263 .D711
Dorlodot, Henri de, 1855-1929. MeMAIN
Darwinism and Catholic thought / by Cano
3 9967 00079 7022

ACCESSION NUMBER 51398

SHELF NUMBER QH366D71

The Virginia Library

McCormick
Theological Seminary

of the

Presbyterian Church, Chicago

825 Belden Avenue

From

Received Dec. 1922

DARWINISM AND CATHOLIC THOUGHT

NIHIL OBSTAT:

C. SCHUT, S.T.D.,

Censor Deputatus.

IMPRIMATUR:

EDM. CAN. SURMONT,

Vicarius Generalis.

WESTMONASTERII,
die 19 *Junii*, 1922.

DARWINISM AND CATHOLIC THOUGHT

By CANON DORLODOT, *D.D., D.Sc., Director of the Geological Institute at Louvain University and Foreign Correspondent of the Geological Society of London.* Translated by the REV. ERNEST MESSENGER, *Professor of Logic and Cosmology at St. Edmund's College, Ware.*

VOL. ONE: THE ORIGIN OF SPECIES

VIRGINIA LIBRARY
MECHANICS
TECHNICAL SEMINARY

LONDON
BURNS OATES AND WASHBOURNE LTD.
28 ORCHARD STREET W.1 — 8-10 PATERNOSTER ROW E.C.4
AND : AT : MANCHESTER : BIRMINGHAM : AND : GLASGOW
1922

VIRGINIA LIBRARY
MCCORMICK
THEOLOGICAL SEMINARY

TRANSLATOR'S NOTE

THIS book has been translated from the first French edition (1921). A few slight modifications have been introduced into the text by the author, and he has in addition revised and considerably enlarged the Fourth Appendix. I have added in a Fifth Appendix the address sent from Louvain to Cambridge to which the author refers in the First Conference. Also here and there a few notes will be found, enclosed within square brackets, for which I alone am responsible. I have likewise added an Index.

The author has been good enough to read through the translation, and to testify that it is exact, and faithfully represents his thought.

E. C. MESSENGER.

ST. EDMUND'S COLLEGE, WARE.

FOREWORD TO THE FRENCH EDITION

IN response to a request on the part of my audience, I had a few copies printed of these first two conferences, delivered during the War before the professors of the University of Louvain at the invitation of the Rector. They were printed actually in 1918, but dated 1913, and were not formally published, in order to avoid the necessity of submitting the work to the German censorship.

I had no intention of giving these conferences the larger publicity which the present re-issue secures for them, for the conciseness of treatment, necessitated by the circumstances of their delivery, does not lend itself to the solution of the many questions which they will suggest to the reader, nor indeed to an exposition of certain philosophical arguments with a development sufficient to bring them within the grasp of an ordinary layman. But certain high authorities have intimated that this very conciseness carries with it advantages which fairly balance the disadvantages referred to: they even insisted that I ought not to encumber the volume by long explanatory notes. I have therefore decided to publish these conferences just as they were printed in 1918, with the exception of a few minor alterations. I add, however, two documentary Appendices, a third concerning a point of exegesis in St. Augustine, and a fourth dealing with the modifications of thirteenth-century thought under the influence of Aristotle's *Physics*.

51398

CONTENTS

PAGE

TRANSLATOR'S NOTE - - - - - v

FOREWORD TO THE FRENCH EDITION - - - vi

FIRST CONFERENCE

DARWINISM AND THE WORK OF THE SIX DAYS 1

FIRST PART: THE GUIDING PRINCIPLES OF THE CATHOLIC INTERPRETATION OF THE SACRED SCRIPTURES - 7

1. The Encyclical of Leo XIII - - - 7
2. The Decrees of the Biblical Commission - 17

SECOND PART: THE TRUE MEANING OF THE HEXAMERON 25

First Proposition: The Hexameron attributes directly to God the origin of all species and all varieties which are clearly distinct, and in particular of domestic varieties - - 28

Second Proposition: The sacred text does not justify the conclusion that the appearance of species was due to a special intervention on the part of God - - - - - - 42

A. Value of the terms attributing the Origin of Vegetable and Animal Forms directly to God 43

B. Examination of the Argument from the Rest on the Seventh Day - - - 46

SECOND CONFERENCE

DARWINISM IN THE LIGHT OF TRADITION AND CATHOLIC PHILOSOPHY - - - - 65

FIRST PART: EVOLUTION IN THE LIGHT OF CATHOLIC TRADITION - - - - - 66

First Proposition: The teaching of the Fathers is very favourable to the theory of absolute natural evolution - - - - 66

Second Proposition: Aristotelian scholastics generally limited the theory of absolute natural evolution to a section of living beings, for scientific reasons, but still all the Doctors remained faithful to the spirit of Christian Naturalism. Provided we remain faithful to this spirit, we are therefore free to accept, at least provisionally, a less radical solution than that of absolute natural evolution, if the present state of science makes this advisable - - - - 87

PAGE

SECOND PART: THE DARWINIAN THEORY OF EVOLUTION AND CATHOLIC PHILOSOPHY - - - 95

Third Proposition : The application of the certain principles of Catholic philosophy and theology to the data of the sciences of observation transforms into an absolute and reasoned certitude the conviction of the simple naturalist in favour of a very advanced system of transformism. It also obliges us to accept, at least as extremely probable, the theory which derives all living beings from one or a few very elementary organisms, as Darwin held - - - 97

Fourth Proposition : The Catholic theory concerning the natural operations of secondary causes is sufficient to account for a natural transformist evolution such as Darwin held, and justifies us in rejecting as altogether superfluous the other special interventions postulated, either by those who hold the Fixity of Species or by the Moderate Creationists. As to the special intervention postulated by Darwin, it seems difficult not to accept it, at least provisionally, given the actual state of our knowledge - - - 105

A. Refutation *a posteriori* of the Objection based on the Principle of Causality - - - 106

B. The Catholic Theory concerning the Natural Activity of Secondary Causes and its Application to the Theory of Transformist Evolution 115

C. Reasons for accepting the Special Intervention postulated by Darwin - - 126

APPENDICES

APPENDIX I.: EXTRACTS FROM THE ENCYCLICAL "PROVIDENTISSIMUS DEUS" OF LEO XIII (18TH NOVEMBER, 1893) 131

APPENDIX II.: DECREES OF THE PONTIFICAL COMMISSION FOR BIBLICAL STUDIES - - - - -

I. Decree of 13th February, 1905, on "Implicit Quotations contained in the Sacred Writings" - - 135

II. Decree of 23rd June, 1905, concerning Narratives which have only the Appearance of History - 136

III. Decree of the 27th June, 1906, concerning the Mosaic Authorship of the Pentateuch - - - 137

IV. Decree of 30th June, 1909, concerning the Historical Character of the First Three Chapters of Genesis 138

PAGE

APPENDIX III. - - - - - - - 141

I. Exegetical Arguments of St. Augustine - - 141

II. Criticism of St. Augustine's Reasoning - - 146

APPENDIX IV.: EVOLUTION OF IDEAS IN THE THIRTEENTH CENTURY UNDER THE INFLUENCE OF ARISTOTLE'S PHYSICS 152

APPENDIX V.: ADDRESS TO THE UNIVERSITY OF CAMBRIDGE FROM THE CATHOLIC UNIVERSITY OF LOUVAIN ON THE OCCASION OF THE DARWINIAN CENTENARY - - 176

INDEX - - - - - - - - 178

DARWINISM AND CATHOLIC THOUGHT

FIRST CONFERENCE

Darwinism and the Work of the Six Days

IN the year of grace 1909 the Rectoral Council[1] of the Catholic University of Louvain decided unanimously to accept the invitation of the University of Cambridge to the celebration of the centenary of the birth of Charles Darwin and the fiftieth anniversary of the publication of his

[1] A note on the organisation of the University of Louvain may be not without its interest. The University is governed by the Bishops of Belgium through a *Rector Magnificus*, who is their representative and Vicar-General, so to speak. The *Conseil Rectoral*, or Rector's Council, consists of the Rector, Vice-Rector, Secretary of the University, the Deans of the various Faculties, the President of the *École St-Thomas*, and the President of the *Institut Agronomique*. It acts in matters concerning studies, discipline, and other things of scientific or pedagogic interest.

The Senate consists of the whole professorial body. It meets but rarely.

Invitations sent to the University from other learned bodies are usually passed on by the Rector to the competent Faculty for consideration. The Darwinian Centenary was considered sufficiently important to call for the consultation of the Rectoral Council, which voted unanimously in favour of acceptance of the invitation from Cambridge. The Faculty of Sciences was made acquainted with this fact, and chose M. Dorlodot as the University delegate for the occasion, at the suggestion of the Rectoral Council. It was M. Dorlodot who drew up the address which, after being approved by the Dean of the Faculty of Sciences and the Professor of Dogmatic Theology, was subsequently read at Cambridge. It is reprinted in the Appendix to this book.

celebrated work, "The Origin of Species." The Rectoral Council did me the honour of selecting me as the representative of the University at this scientific gathering.

The honour thus paid to the founder of Darwinism by the first learned body of the Catholic world was greatly appreciated in England. At the solemn assembly, when the delegates of the various Universities were called upon to present in turn their addresses to the Chancellor,[1] each name was naturally greeted with applause; but the clapping was redoubled when the Registrar of the University announced "The delegate of the Catholic University of Louvain." The élite of English Catholics were equally pleased. I was informed that my address sounded just the right note in the opinion of all the Catholics present, and was subsequently given publicity in the *Tablet*.

In Belgium, on the other hand, the incident caused some surprise, and led to certain criticisms. I consider that, as I was called upon to represent the University on the occasion in question, it is not unfitting that I should establish before the professorial staff that our Catholic University did not on the occasion in question derogate from the honour of its name. Accordingly, I have decided to address you on the subject of Darwinism considered from the point of view of Catholic orthodoxy.

The subject is much too big to be dealt with in a single conference. Strictly speaking, I could have abstained from dealing with the origin of man, since the celebration to which I was sent had as its subject the fiftieth anniversary of "The Origin of Species," and not of "The Descent of Man." But if I were to fight shy in this way when confronted with the most delicate part of my task, I should appear guilty of an act of cowardice; and, moreover, if the thesis of the origin of man by way of evolution had been regarded as in substance worthy of condemnation—if Darwin were a heretic on this point, as certain people have declared—then the three Doctors of

[1] Lord Rayleigh.

Divinity[1] in the Rectoral Council, and who were all three, for different reasons, particularly competent on the matter in question, would not have insisted as they did that the University should not fail to join in the celebration at Cambridge, and the *Conseil rectoral* would have been obliged to decline the invitation. Could one imagine a Catholic University celebrating a centenary of the birth of Luther, even considered merely as the creator of the German language?

I find myself obliged, then, to divide the subject into several conferences. The first two will be devoted to the Darwinian theory in general, apart from the special question of the origin of man. This latter question will be reserved for one or more conferences to be given at some future date.

The general question which I propose to deal with in the first two conferences may be stated thus:

What judgment must we pass upon the Darwinian theory from the point of view of Catholic orthodoxy, if we leave out the special subject of the origin of man?

Let us first make quite clear what we mean by this question.

Evidently we are not concerned here with the purely scientific details which the theory implies. It matters little to us whether the origin of new species should be attributed principally to the transmission by way of heredity of characteristics which have been acquired in the course of the life of individual

[1] Mgr. P. Ladeuze, Doctor of Theology, then Professor of Holy Scripture and of Patrology at the Catholic University, now Protonotary Apostolic *ad instar participantium*, and Rector of the University; Mgr. J. Laminne, Doctor of Theology and of Philosophy, then Professor of Dogmatic Theology at the University, now titular Bishop of Inschilla, Auxiliary and Vicar-General to Mgr. Martin-Hubert Rutten, Bishop of Liège; Canon V. Gregoire, Doctor of Theology, of Philosophy, and of Natural Sciences, Professor of Botany and of General Biology at the University. There was a fourth Doctor of Divinity in the *Conseil*—namely, the Rector himself, but he referred the matter to the other three, as explained in the text.

organisms, or whether it should be attributed instead to the sudden appearance of important modifications such as those which take place when a plant with double flowers comes from the seed of a plant with single blossoms. Nor are we concerned with the question whether the most important factor in evolution is the action of natural selection on the minute differences which always differentiate progeny from parents. All these points, about which naturalists argue and will argue for a long time to come, are clearly outside the scope of theology; and if philosophy has something to say on the matter, it is simply because no science can dispense with logic.

We are therefore concerned here only with the fundamental teaching of Darwin, and this can be summed up in the two following propositions:

(1) The primary origin of living beings is the result of a special influence on the part of the Creator, who infused life into one or a few elementary organisms.

(2) These organisms, by evolving in the course of ages, have given rise to all the organic species which exist at the present time, as well as those which have come down to us only in the fossil state.

Opposed to this fairly moderate system of Natural Evolution are two extremist opinions: the theory known as Absolute Evolution, and the theory known as Creationism or Fixism.

The theory of Absolute Evolution denies the special intervention of God, even in the origin of life: it attributes the first origin of living beings to a natural evolution of inorganic matter, which became organised and ultimately living matter by the simple action of forces, or better still, of powers inherent in matter, or which at least were inherent in it in days gone by.

The Creationist theory, on the other hand, admits a special intervention of God at the beginning of each one of the groups which we now call species. Between this latter theory and the Darwinian theory there is room for a host of intermediary theories which we may designate as Theories

of Mitigated Creationism or as Mitigated Evolution. The one which comes nearest to the Fixity theory is that which admits a special intervention of God at the beginning of each genus. Others demand a special intervention of the Creator at the beginning of each great division of animals and plants. Finally, a certain number of moderate evolutionists confine themselves nowadays to adding to the intervention postulated by Darwin at the origin of life a further special intervention at the passage from vegetable to animal life, and a final special intervention for the passage from the animal world to man. We shall not discuss the last point, but leave it to be considered when we deal with the origin of man.

The question at issue can be regarded from the point of view of positive theology or from that of speculative theology.

Positive theology studies immediately the sources of Christian doctrine, these being principally the Bible and the teaching of the Fathers and Doctors of the Church.

Speculative Theology, which is in the present case the same as Catholic Philosophy, starts from the truths established by Positive Theology and makes certain logical deductions from them, reasoning either from these truths alone, or else making use also of the data of natural knowledge.

Leaving aside, as we have said, the question of the origin of man, the examination of the subject from these two points of view will lead us to the following conclusions:

(1) We cannot find in Holy Scripture, interpreted according to the rules of Catholic exegesis, any convincing argument against the theory of natural evolution—even that of absolute evolution.

(2) The teaching of the Fathers of the Church is very favourable to the theory of Absolute Evolution. At the same time, the example of some great Doctors justifies us in accepting the solution of the matter indicated by the present state of science.

(3) The application of principles of Catholic theology and philosophy—principles themselves certain—to the concrete data of the sciences of observation, elevates into an

absolute certainty the conviction of the simple naturalist who holds a very radical system of transformism. Such application leads us, moreover, to accept, at least as eminently probable, the theory which derives all living beings from one or a few very simple types of organisms, which is Darwin's own view. On the other hand, since there are scientific difficulties against the theory of absolute evolution, Darwin's hypothesis of a special intervention on the part of God at the origin of life seems legitimate, at least for the time being.

(4) The Catholic theory concerning the natural activity of secondary causes is capable of explaining a natural transformist evolution as Darwin understood it, and entitles us to reject as entirely superfluous the additional special interventions postulated by those who hold the fixity of species or by the moderate Creationists.

The first of these four propositions constitutes the negative part of our thesis, and the three others the positive part. I confine myself at present to the proof of the first proposition. And since the Scriptural objection usually urged against the general theory of Darwinism is derived from the narrative of the work of the Six Days of Creation in the first chapters of Genesis, I have entitled this conference "Darwinism and the Work of the Six Days."

I maintain, then, that one cannot find in Holy Scripture, interpreted according to the rules of Catholic exegesis, any convincing argument against the theory of natural evolution—even that of absolute evolution.

As I am addressing those who for the most part are more at home in the profane than in the sacred sciences, I think it advisable to explain first of all those rules of the Catholic interpretation of the Holy Scriptures which specially apply to our subject. When I have done this I shall be in a position to examine the difficulties which certain authors have drawn from Holy Scripture against the theory of the origin of living species by natural evolution. The first part of this conference may, moreover, be regarded at the same time as a general introduction to our Conferences on Darwinism.

FIRST PART

The Guiding Principles of the Catholic Interpretation of the Sacred Scriptures

I shall commence by briefly recalling the Catholic teaching concerning the Holy Scriptures and their absolute veracity. This teaching was solemnly asserted by Leo XIII in his great encyclical *Providentissimus Deus,* dated the 18th of November, 1893. I shall then proceed to expound the principles which, according to this encyclical, must be our guides in the interpreting of those passages of Holy Writ which seem to deal with matters studied by the natural sciences, and also in the employment of patristic arguments in such matters. Lastly, I shall deal with such decrees of the Biblical Commission organised by Leo XIII as may concern our subject.

1. The Encyclical of Leo XIII[1]

As you know, the Bible, or Sacred Scripture, is called the Written Word of God, and the Church recognises God Himself as the Author of Holy Scripture and of all its parts. But at the same time the Church acknowledges as authors of the various parts of the Bible certain men who are accordingly referred to as the sacred authors, or hagiographers.

God is the principal Author of the Holy Scriptures inasmuch as they were composed under the inspiration of the Holy Ghost. "The Church," declares the Vatican Council,[2] "regards these books as sacred and canonical . . . because, having been composed under the inspiration of the Holy Ghost, they have God for their Author." (*Propterea quod, Spiritu Sancto inspirante conscripti, Deum habent auctorem.*)

As for the sacred writer who composed his book under the influence of the Divine inspiration, he acted as an instrument of God. *Spiritum Sanctum assumpsisse homines tanquam instrumenta ad scribendum,* says the encyclical—the Holy Ghost employed men as His instruments. But it is none the

[1] See Appendix I.

[2] Sessio III, cap. ii.

less true that the human writer is just as much the author of the book as if he had written it independently of all inspiration, for, although he composed it under the influence of inspiration, he did in fact compose it (" Spiritu sancto inspirante *conscripti* "—Vatican Council).

These two truths are in no way contradictory, for God, the First Cause, is able to order the activities which belong to secondary causes and flow from their nature, in any way and for any end He wills. And it pleased Him so to direct the activities of the sacred writers that in freely composing the writings of which they are the authors, they wrote accurately, and as divinely chosen instruments, just those things which God wished them to write and nothing more. *Ut ea omnia, eaque sola quae ipse juberet, et recte mente conciperent, et fideliter conscribere vellent, et apte, infallibili veritate, exprimere.* Thus the sacred authors, while composing their literary work in the same way as profane authors, at the same time produced a work which in all its parts, even the smallest, is also the literary work of God.

Since the Holy Scriptures as a whole have God as their ultimate Author, it is evident that the human author, who composed this Divine work under the influence of inspiration, could not fall into error. " Inspiration necessarily excludes all error, for God, the Supreme Truth, cannot possibly be the author of any error."[1]

From this truth there follows a practical consequence of the highest importance: we must reject *a priori* any interpretation which would make Holy Scripture affirm something which can be shown to be false. Consequently, if something which was thought to be affirmed in a passage of Holy Writ should one day be found to be untrue, we must conclude without any hesitation whatever that the passage in question was wrongly interpreted. In doing so we should only be following the rule of St. Augustine,[2] recalled and adopted by Leo

[1] Quotations are from the Encyclical, unless otherwise specified.
[2] Ep. LXXXII.

XIII: "If in these writings I should come across something which seems contrary to the truth, I should not hesitate to conclude either that the manuscript is defective, or that the translator had not exactly grasped the passage, or else that I myself had not understood it."

Still, if we are to interpret the Bible properly, it will not suffice to consider it only as coming from God its principal Author: we must also take the instrumental author into consideration, for, as we have already pointed out, the sacred writer, although acting under the influence of inspiration, nevertheless composed his book in a way and by methods identical to those employed by profane authors, so that he himself is also the author in the strict sense of the term. This explains why the impress of his personality is so strongly marked in his work.

Such is the Catholic theory of inspiration, which the Theological Faculty of the old University of Louvain had the honour of defending in all its purity against the founders of Protestantism—and likewise against other writers. The theory does not rest merely upon the constant tradition of the Church: it is based also upon the testimony of the sacred writers themselves. Thus, for instance, St. John claims to be an eyewitness of the events he narrates,[1] while St. Luke[2] brings forward his Gospel as the result of research carried out with the greatest possible care. Others mention their sources, speak of their credibility and value, and inform us that they have summarised them faithfully, "a business full of watching and sweat."[3]

Inspiration, then, does not of itself imply any Divine revelation, and it may even be that the sacred author composed his work without knowing that he was acting under the influence of inspiration. This would indeed seem to be the case with St. Luke, who wrote his Gospel because he considered it useful to publish the result of his researches, and thus imitate an example set by many others.[4]

[1] I John *i*, 1-5; Gospel of St. John xix, 35.
[2] Luke *i*, 1-4. [3] II Mach. *ii*, 20-33. [4] St. Luke, *loc. cit.*

Still, it may be that the sacred writer did receive revelations, either at some previous time, like St. Paul, or at the time of writing, and accompanied by a command to write, as was the case with many of the prophets and St. John's Apocalypse, or perhaps even when the work is being put together. But in any case there is one thing which we have the right to affirm with complete certitude: *on those matters which form the proper object of the physical and natural sciences, God taught nothing to men by the intermediary of the sacred authors, since such instruction could not be of any use for their eternal salvation.*

Such is, in fine, the important truth which Leo XIII puts forward as the *fundamental principle* which we ought always to bear in mind when we endeavour to harmonise the text of Holy Writ with the data of the natural sciences: *In consideratione sit* PRIMUM, *scriptores sacros, seu verius " Spiritum Sanctum, qui per ipsos loquebatur, noluisse ista (videlicet intimam aspectabilium rerum constitutionem) docere homines, nulli saluti profutura."*[1]

This principle is taken from St. Augustine, and could already be looked upon as a Catholic principle, since it was commonly taught, at any rate in theory. But in practice it was only too often forgotten, perhaps because the subject of the proposition was not sufficiently defined, a defect which might render the application of the principle doubtful from time to time. Leo XIII in consequence occupies an important position in the history of theology, since he limited the principle to the proper object of the physical and natural sciences (*intimam aspectabilium rerum constitutionem*), and laid down the principle thus defined as the foundation or starting-point for all who seek to harmonise Holy Writ

[1] The passage in quotation marks is an extract from St. Augustine (*De Genesi ad litteram*, lib. II, cap. ix), with the exception of the words in brackets. These last are added by Leo XIII, *who thus makes quite clear the subject of the proposition which he wishes to teach as Doctor of the Universal Church.* The subject was not sufficiently defined by the passage of St. Augustine taken by itself.

with the certain teaching of the physical and natural sciences.

Henceforth, then, it is no longer allowed to violate this principle, and when our excellent apologists of the nineteenth century come again to us and say that "Moses was either inspired, or else he was naturally conversant with the latest discoveries of modern science," it is our duty to retort that if their interpretation of Genesis really implies such a consequence, then this interpretation is certainly false. And speaking generally, we must reject *a priori* any interpretation which would make a text of Holy Writ a Divine instruction upon a subject belonging to the physical or natural sciences.[1]

How, then, must we understand the passages in the Bible which appear to deal with such things? Leo XIII hastens to tell us, for when he has formulated the fundamental principle, he continues in these terms: "That is why instead of directly seeking to penetrate the nature of things they (*i.e.*, the sacred writers) rather described and sometimes dealt with things either in more or less figurative language (*quodam translationis modo*), or else in terms commonly used at the time, and which in many instances are analogous to those still in use in ordinary life even among the most learned men.

[1] [This statement seems somewhat startling at first sight, but it really follows from two propositions which Leo XIII lays down in his Encyclical.

(1) The Holy Ghost so moved the sacred writers that they wrote all those things and *only those things* which He Himself ordained ("Nam supernaturali ipse virtute ita eos ad scribendum excitavit et movit, ita scribentibus adstitit, ut ea omnia *eaque sola* quae ipse juberet . . . conscribere vellent").

(2) The Holy Ghost, who spoke through the sacred writers, *did not wish to teach men these things*—namely, the inmost constitution of visible things ("Scriptores sacros, seu verius Spiritum Dei qui per ipsos loquebatur, noluisse ista [videlicet intimam adspectabilium rerum constitutionem] docere homines").

The statement of the author is simply the conclusion which follows evidently from these two propositions.—TR.]

And since in ordinary speech one describes first and foremost that which comes under the senses, similarly the sacred writer (as the Angelical Doctor also reminds us)[1] ' went by what sensibly appeared,' or in other words, ' God Himself, in addressing Himself to men, expressed Himself in the customary manner of men (*humano more*), in order to be understood by them.' "

Therefore, according to the teaching of the Sovereign Pontiff, when the sacred writers describe natural objects, we must understand them sometimes in a figurative sense, and at other times we must simply bear in mind that they are speaking the language of the men of their time, language which corresponds more often to the sensible appearances than to the inmost nature of things. It is by means of these rules of interpretation that we must seek the explanation of the apparent contradictions between the language of Holy Scripture and that of modern science.

We said just now that Leo XIII himself limited the subject of what we called the fundamental principle. We are accordingly not free to extend it further, at least by virtue of the authority of the Sovereign Pontiff. One might ask whether the same limitation applies to those rules of interpretation which we have just mentioned.

I think it does hold good in the case of the language which the sacred writers used conformable to appearances. Such language, in fact, has a very special application when we are dealing with the material universe, where there is room for a distinction between the phenomenon and the noumenon: and it is precisely in this way that St. Thomas, whose authority is quoted by Leo XIII, understands the matter. The context, moreover, clearly indicates that Leo XIII also has in mind this sense exclusively, whatever may be said to the contrary. Moreover, the Biblical Commission has in recent times dealt *ex professo* with the question of " historical appearances," and it is in the Responses of the Biblical

[1] *Summ. theol.*, I, q. LXX, a. 1, ad 3 m.

Commission and not in the Encyclical of Leo XIII that we shall henceforth find the exact rule to be followed in this matter.

On the other hand, I think that we may by a process of logical deduction apply to other questions, and especially to those of an historical character, the two other rules, always provided this is done with discretion. For it is evident that we cannot exonerate Holy Scripture from error when in speaking of natural objects it uses figurative language or language conformable to the custom of men, if the same will not hold good for other objects. For whatever subject they may be treating the sacred writers make use of human language, which implies the use of figures of speech of all kinds, and it is not only in speaking of natural objects that they are men of their country and of their time speaking to other men of the same country and time.

From this we can conclude that whatever may be the subject dealt with, the truthfulness which must be claimed for the sacred writings does not necessarily consist in a perfect equivalence between the grammatical meaning of the phrases and the object dealt with, but rather, the truth of Holy Writ is sufficiently safeguarded once there is shown to exist between the sacred text and the object dealt with a likeness such that the writing may be adjudged truthful according to the ordinary exigencies of human language, and more particularly according to the exigencies of the language of the time and of the country in which the book was composed.

As it is not my intention to give a General Introduction to the Holy Scripture, I must confine myself to enunciating this formula without developing it further. Still, since the question of the origin of species, while belonging to natural science so far as the means are concerned, belongs also to history if one uses the term in the wide sense of a narrative of events which succeed one another in time, I think it well to point out that history has room for all kinds of figurative language, even including pure allegory. Would it be possible to outline the history of Napoleon in a way more arresting

than Barbier has done in the best known of his Iambics?[1] Or if I may be allowed to quote yet another example, could one depict the civilising of the victorious barbarians by the Gallic Church better than is done by the song of the *Bon Roi Dagobert?* The first couplet describes the situation in a masterly manner: the barbarians, although converted some time before to Christianity, yet still incapable of anything good if left to themselves. It was only when they submitted to the teaching and reprimands of the Gallic Church that they succeeded in learning to behave like civilised people. Even this only came about little by little, as indeed the multiplicity of couplets gives one to understand. The verses bring out well the patience and indomitable perseverance of the monks and bishops who laboured to tame these wild spirits, ever liable to be led away once more by their savage instincts. In contrast to Barbier's Napoleon, a figurative history indeed, but one written for cultivated minds, the *Bon Roi Dagobert* is a figurative history for the people, and so improbabilities and anachronisms are not at all out of place. In the form of this popular figurative account, we have a true and very edifying narrative. The decisions of the Biblical Commission with regard to the first chapters of Genesis will show us soon that an inspired writing may belong to the same class of literature.

But let us return to the Encyclical of Leo XIII.

After laying down the rules to be followed in the interpre-

[1] O Corse à cheveux plats, que ta France était belle,
Au grand soleil de messidor,
C'était une cavale indomptable et rebelle, etc.

[The student of English literature will readily recall similar examples in our own tongue. Thus we have Dryden's *Absalom and Achitophel,* and *The Hind and the Panther.* In the same way many Elizabethan works are full of fanciful and figurative descriptions of the Virgin Queen and the events of her time. What the Biblical Commission refuses to allow is, not that there are allegories and symbols in the early chapters of Genesis, but "allegories and symbols *devoid of any foundation of objective reality*" (allegorias et symbola, *fundamento objectivae realitatis destituta*).—TR.]

tation of those texts of the Bible which deal with natural objects, the Sovereign Pontiff warns us against a possible misuse of the patristic argument in such matters. This is what he says:

"The strenuous defence of Holy Scripture does not require that we should equally uphold all the opinions which each one of the Fathers or later interpreters have put forward in explaining it. For it may be that, in commenting, according to the ideas of their times, on passages where physical matters are dealt with, their judgments were not always in accordance with truth, so that they may have made certain statements which cannot be accepted nowadays. Hence, in their interpretations we must carefully distinguish what they lay down as belonging to the faith or closely connected with it—what they are unanimous in. For 'in those things which do not come under the obligation of faith, the saints were at liberty to hold different opinions, just as we ourselves are,' according to St. Thomas."[1]

The Council of Trent[2] and the Vatican Council[3] have laid down that in matters of faith, and of morals pertaining to the edification of Christian doctrine, it is not lawful to interpret the Sacred Scripture in a manner contrary to the unanimous consent of the Fathers. Although this formula is quite clear, and all theologians interpret it in the same way as Leo XIII, there have been not wanting certain discontented people who have abused it precisely in order to restrict the rightful freedom of such Catholics as are inclined to naturalist views. Leo XIII rebuked this misguided zeal, and in order to prevent any misunderstanding for the future, he explicitly laid down that the authority of the Fathers can only be invoked as definitive upon two conditions:

(1) They must give their interpretation as belonging to the faith or having a strict connection with it.

(2) They must give it unanimously.

It is true that theologians usually take this unanimous

[1] *In II Sent.*, Dist. ii, q. 1, a. 3.

[2] Sessio IV, *Decretum de editione et usu sacrorum librorum.*

[3] Sessio III, cap. ii.

agreement to mean moral unanimity, but they are careful to add that the opinions of the Fathers must be weighed rather than counted, so that if one particular Father is a very great authority, either absolutely or on a particular point, his opinion may outweigh the authority of all the rest. It is not without interest to note in this respect that St. Thomas Aquinas,[1] who thought—erroneously as it happens—that St. Augustine is the only one of the Fathers who understands the six days of creation in an allegorical sense—considered himself nevertheless at liberty to prefer the opinion of Augustine to what he calls " the opinion of the other saints." And Leo XIII proclaims in his turn the pre-eminence of St. Augustine when, enumerating elsewhere in his Encyclical the Fathers who distinguished themselves by the best work in Biblical matters, he puts in the very first rank of the Latin Fathers St. Augustine and St. Jerome: " Augustine, because of his wonderful acuteness in discovering the meaning of God's Word, and his fertile use of it in the defence of Catholic truth; Jerome, who has been honoured by the Church under the name of *Doctor Maximus*, in consideration of his unique knowledge of the Scriptures and his great labours in promoting their use." Now, if the authority of St. Augustine as an interpreter of the Divine Word is here proclaimed in general terms, his authority will be all the greater when we are dealing with the first chapters of Genesis, which occupied St. Augustine throughout his whole life. Let us add that the Eastern Father placed first by Leo XIII is Origen.

There is one point in this teaching of the Sovereign Pontiff which must be stressed—namely, that some interpretations of the Fathers and Doctors of the Church of passages of Scripture concerning natural things may arise simply from the opinions current in their day, in which case it may be that these opinions are no longer acceptable at the present time.

Are we to conclude from this that in such a case we are completely free to interpret Holy Scripture as we think fit?

[1] *In II Sent.*, Dist. xii, q. 1, a. 2 (cf. *ibid.*, a. 3).

I do not think so: for did not Leo XIII himself feel bound to base himself upon the teaching of the Fathers and Doctors, in outlining the way we should proceed when face to face with a new difficulty of interpretation? So that even if it behoves us occasionally to abandon an ancient interpretation which is no longer tenable, the Holy Fathers will still always remain our models, and it is in their spirit that we should attempt the solution of such problems. I will go further: if on matters that have no direct connection with Christian doctrine we must sometimes abandon the interpretation of the Fathers, it is precisely because if we kept to the letter of their teaching we should be forsaking their spirit, which after all is the traditional spirit of Christianity.

2. The Decrees of the Biblical Commission[1]

Let us now pass on to the decisions of the Biblical Commission.

On the 3rd of October, 1902, a few months before his death, Leo XIII appointed a Pontifical Commission entrusted with the promoting and guiding of Scripture studies.

The Biblical Commission thus constituted carried out a great deal of investigation, in the course of which the principal Catholic Biblical scholars were called upon to state their opinions; and since then decisions have been published in the form of replies to questions. The questions themselves are composed with great care by the Biblical Commission itself, but the replies alone have the force of law.

As certain doubts were raised concerning the binding force of these decisions, Pius X declared in a Motu Proprio, *Praestantiae Scripturae Sacrae*, dated 18th of November, 1907, that "all are bound in conscience by the decisions of the Pontifical Biblical Commission, whether already published or to be published in the future, just as they are bound to submit to Decrees of Sacred Congregations when concerned with doctrine and approved by the Sovereign Pontiff; nor can

[1] See Appendix II.

anyone combat these decisions either verbally or in writing without incurring the note of disobedience and temerity and thus becoming guilty of grave fault."

There are four decrees of the Biblical Commission which directly or indirectly affect our subject. It must be borne in mind that, according to the rules of canon law, such decisions, when they result in the limitation of freedom, are of strict interpretation. The questions and replies are drawn up with this rule in mind, and accordingly may have in the eyes of a layman an appearance of severity which has no foundation in fact. Thus, for instance, if the Biblical Commission declares that we may not *affirm with certainty* an opinion,[1] it does not thereby follow that we may not regard it as a possible view: if so the Commission would say so, and if it has not said so it is not by inadvertence but precisely because it did not wish to say so. I must also point out that the authority of the Commission is not less when it pronounces in favour of liberty than in the contrary case. But there is this difference: decisions which favour liberty are to be interpreted in a wide sense.

Having laid down these principles, let us summarise the points which interest us in the decrees of the Biblical Commission referring to our subject.

The first of these deals with implicit quotations.[2] We have already seen that the sacred writers sometimes made use of documents, and even transcribed passages from them. The question has arisen whether in order to account for the contradictions between texts, sometimes in one and the same book, one could suppose that the sacred writer simply copied out the contradictory documents without making himself responsible for their contents, and perhaps without even mentioning that he was citing a source.

The Biblical Commission does not deny that this might sometimes be the case, but it demands that before affirming that it is so, we must prove by solid arguments that the sacred

[1] Latin: *affirmare*. [2] Decree of 13th February, 1905.

writer is really quoting the statements or writings of another, and that in addition he does not intend to make himself responsible for such statements. This is clearly common-sense.

The second decree deals with narratives which are only apparently historical.[1] Asked to reply to the question "whether we can admit as a principle of sound exegesis the opinion according to which those books of Holy Scripture which are regarded as historical whether wholly or in part, occasionally do not narrate history properly so-called and objectively true, but only something having the appearance of history and intended to signify something different from the strictly literal and historical meaning of the words," replies in the negative, "except in the case—one not to be easily or rashly granted—in which, the sense of the Church not opposing, and subject always to her decision, it is proved by solid arguments that the sacred writer intended to give, not history truly and properly so-called, but under the appearance and form of history, a parable, allegory, or some meaning remote from the strict literal or historical meaning of the words."[2] This general reply has lost some of its interest for us since the Biblical Commission has itself explained how we must understand the historical character of the first three, and more especially the first chapter of Genesis.

The third, and above all, the fourth decree concerning our subject are of the highest importance. The third[3] deals with the origin of the Pentateuch, of which Genesis is, of course, the first book; the fourth[4] concerns the historical character of the first three chapters of the book in question, in which are contained the narratives of the origin of the world and of man, and the fall.

In the decree which deals with the origin of the Pentateuch, the Commission, while displaying marked favour for the traditional opinion which regards Moses as the author of these

[1] Decree of 23rd June, 1905.

[2] The passage between the last quotation marks belongs to the Reply, while the former passage comes from the Question.

[3] Decree of 27th June, 1906. [4] Decree of 30th June, 1909.

books,[1] gives a very wide interpretation to this opinion. In particular, we are allowed to hold that Moses in composing his work entrusted its redaction to various amanuenses working under his guidance, and also that "he made use of sources, that is, written documents or oral traditions, from which he took some things suitable for the end he had in view, under the influence of the Divine inspiration, and inserted them in his work, either word for word, or else their sense, with abbreviations or amplifications."

That these concessions are in no way contrary to the idea of inspiration will be evident from what we have already said. Still, the Biblical Commission does not make them for the sake of an abstract principle, but because it recognises that the plurality of literary origin of the books attributed to Moses is based upon solid arguments. This plurality of origin is generally admitted nowadays by exegetes. Personally, I have studied the question seriously only in the case of Genesis, and I have come to the conclusion that so far as Genesis is concerned there is no room for doubt. The principal sources which the author used are three in number: they are often known as the Priestly Code, the Jahvist Document, and the Elohist Document. This last does not appear before the account of Abraham, and therefore does not concern us. On the other hand, it is important to note that the Hexameron, or narrative of the six days of Creation, forms part of the document known as the Priestly Code, while that which follows, from the middle of verse 4 of Chapter II to the end of Chapter III, comes from the Jahvist document. The part of Genesis which specially interests us is thus the work of a

[1] The Biblical Commission does not allow that the arguments accumulated by the critics against the Mosaic authorship of the books of the Pentateuch, when contrasted with the arguments in favour of this authorship, give the right to *affirm* that these books have not Moses for their author, but were composed from sources for the most part later than the time of Moses. At the same time, the Commission does not formally forbid one to *call into question* the Mosaic authorship of the Pentateuch, even in the restricted sense determined in the subsequent Replies.

compiler, whom we will call Moses if you wish, and who composed it by piecing together two fragments of different literary origin. The compiler is the author of Genesis: we know from the testimony of the Church that he acted under the influence of inspiration. It may be that the authors of the original documents were equally inspired, but as we have no certitude on this matter, the Biblical Commission prudently abstained from touching upon it.

The fourth decree is far and away the most important for us, since it deals directly with the first three chapters of Genesis. The Commission begins by forbidding the teaching of certain systems which deny the historical character of these chapters; it then forbids in particular the calling in question of the historical character of such facts related in these chapters as concern the foundations of the Christian religion. Certain of these facts are then enumerated. Only one of these has to do with the subject of the present conference: that of the creation of all things made by God in the beginning of time (*rerum universarum creatio a Deo facta in initio temporis*). But it is important to note that the enumeration is not restrictive: if then some other fact connected with the foundations of Christian doctrine were regarded by the general opinion of the Fathers as taught in the first chapters of Genesis, we should be obliged to admit the historical character of this also, but not formally on the authority of the Biblical Commission. On the other hand, if the Commission has abstained from including in its enumeration a point the historical and doctrinal character of which has led to great discussions in modern times, it is clear that the silence of the Commission on the matter is voluntary, and in consequence, any Catholic writer who dared afterwards to censure an opinion which the Pontifical Commission decided to leave open would be guilty of grave irreverence towards the Holy See, and of a grave sin of calumny against the authors or defenders of this opinion, not to mention the scandal which might follow if, as a result of his rash conduct, men of science should be estranged from religion, or the Church exposed to unjust attacks.

After thus reproving in Nos. I, II, and III views which are too large, the Pontifical Commission enunciates a series of decisions in favour of liberty.

First, in the case of passages which the Fathers and Doctors understood in different ways without leaving us anything definite or certain, everyone is at liberty to follow and uphold an opinion prudently arrived at, subject to the Church's judgment, and provided the analogy of the faith is safeguarded.[1]

There are two things to note with regard to this Reply. In the first place, if, in spite of the divergent opinions of the Fathers concerning the interpretation of a passage, these divergent interpretations do nevertheless contain some common element of a doctrinal character, such element belongs to the Catholic tradition and must be adhered to as such. Subject to this reserve, the Commission allows us not only to choose between the opinions of Fathers and Doctors, but also to follow and defend a new opinion, upon the conditions laid down.

Passing on to the intrinsic rules of interpretation, the Commission declares that " it is not necessary to take all the words and phrases always strictly in their exact meaning, but that it is sometimes permissible to depart from the exact sense, and this especially when it is quite apparent that the expressions are used in a peculiar way, metaphorically, or anthropomorphically, and when reason forbids the adoption of the strict sense, or necessity obliges us to abandon it."

In this Reply the Pontifical Commission makes it sufficiently clear that it considers the style of the first three chapters of Genesis to be fairly figurative. We must also draw attention to the distinction made between the cases when reason forbids us to adopt the strict sense, and those when necessity compels us to abandon it. The Commission clearly suggests here that certain too literal interpretations which were held at other times must now necessarily be abandoned.

We will leave aside for the moment the sixth Reply concerning the allegorical and prophetic senses. These will be dealt with when we treat of the origin of man.

[1] We give here the sense of the Decree, but not its form.

In the seventh and eigthth Replies, the Commission considers in greater detail the interpretation of the first chapter of Genesis—*i.e.*, the Hexameron, or Six Days. "Since it was not the intention of the sacred writer to teach the inmost constitution of visible things, or the complete order of creation, in a scientific manner, but rather to give to his countrymen a popular notion, conformable to the ordinary language of those times, and adapted to their opinions and intelligence, we must not always and regularly look for scientific exactitude of language when interpreting this chapter."

It is easy to see that this response is an application of the rule laid down by Leo XIII, but, in accordance with the teaching of the Fathers and Doctors of the Church, it stresses the low level of the intellectual culture of the people for whom Moses wrote, and also the fact that the sacred author had, in order to be understood by his readers, to adapt himself to their opinions, opinions which were doubtless erroneous, for to have to adapt oneself to true opinions would not make sense here. We must also note the phrase "popular notion" (*tradere "notitiam popularem"*). The first two Replies tell us that the first three chapters of Genesis are historical in character, the fifth gives us to understand that the language of these chapters is nevertheless full of figures. We now gather that the account in the first chapter is in addition popular in character. Although, strictly speaking, the Biblical Commission defines nothing on the matter,[1] inasmuch as the Reply only has the force of law, as already pointed out,[2] still, the setting-out of the questions makes it sufficiently

[1] See above, note 1, p. 22. The reasons why "we must not always and regularly look for the exactitude of scientific language when interpreting this chapter" are laid down in the Question. As the Questions are formulated by the Biblical Commission itself, we may gather throughout the text indications of what opinions are dominant in the Commission. But as the Reply alone has the binding force of law, the parts of the text of the Question which do not formally affect the Reply have no binding force. This is the case with the reasons mentioned in No. VII.

[2] See p. 17.

evident that the opinion which considers the Hexameron as belonging to the class of literature known as figurative and popular history meets with the entire approval of the Commission.

The eighth and last Reply in the decree of the 30th of June, 1909, gives to exegetes full liberty to discuss whether the word "Yôm" should be understood to signify a natural day, or a certain length of time or period. We shall show later on that serious exegesis can only accept the first solution, but as the question does not concern the faith, and as the theory of the "day-periods" had been upheld in the nineteenth century by many Catholic theologians and Scripture scholars, the Biblical Commission did not consider itself called upon to censure it.

Shortly after the publication of these decrees of the Biblical Commission, Pius X, having undertaken a reform of the Smaller Catechism of the Diocese of Rome, had the hypothesis of "day-periods" suppressed in the Summary of Bible History annexed to the Catechism. There is no longer any question of the six days, nor of the rest of the seventh day, and the works of creation are enumerated in an order different to that of the Hexameron. Pius X was in this instance acting simply as Bishop of Rome, and his authority is not binding on the Universal Church. Still, from the modifications thus introduced after the promulgation of the decree of the Biblical Commission, in the Summary of Bible History which the Pope had himself published some years previously, we may infer that, enlightened by the deliberations of this Commission, Pius X came to regard as false or at least as improbable the hypothesis of day-periods, and to cease to attach an historical character to the order of succession of the works of creation as it is found in the first chapter of Genesis. In other words, he regarded the order of succession given in this chapter as belonging to the figurative elements of the narrative. This is, indeed, the ancient thesis of St. Augustine, which we ourselves look upon as absolutely certain, and which we shall develop further on. Discontented people who wish to reproach us on this score must at least admit that we find ourselves in not too evil company.

SECOND PART

The True Meaning of the Hexameron

Guided by the teaching of the Holy See itself, we are now in a position to examine without fear of going astray the objections which certain authors have endeavoured to bring from Holy Scripture against the theory of the origin of organic species by natural evolution. The texts relied upon belong to the Cosmogony of the Sacerdotal Code or Hexameron, or else are related to this Cosmogony.

We read in Gen. i. 11 and 12:[1]

"And God said: 'Let the earth be verdant with young verdure;[2] herbs seminating seed,[3] fruit trees yielding fruit having within itself its seed according to their species, upon the earth.'

"And the earth caused the young verdure to appear: herbs having seed according to their species, tree producing fruit having within itself its seed according to their species."

Then we have in verses 20 and 21:

"And God said: 'Let the waters swarm swarming animals,[4] and let fowl fly between the earth and the surface of the solid partition of the sky.'

"And God created the great aquatic animals, and all the wriggling animals which swarm in the waters, according to their species, and all the winged fowl, according to their species."

[1] [The author gives a direct and literal translation from the Hebrew, which I have thought it best to reproduce here in English rather than to quote from any existing English version.—Tr.]

[2] Hebr.: תַּדְשֵׁא הָאָרֶץ דֶּשֶׁא (*herbascat terra herbulam*).

[3] Hebr.: מַזְרִיעַ זָרַע (*sementantem semen*) LXX: σπεῖρον σπέρμα.

[4] The Hebrew text (יִשְׁרְצוּ הַמַּיִם שֶׁרֶץ נֶפֶשׁ חַיָּה) has a play upon words which we have sought to copy as much as possible in our translation. See below, pp. 39-40.

There are also similar plays upon words in verses 11 and 12. Cf. notes [2] and [3].

Lastly, we have in verses 24 and 25:

"And God said: 'Let the earth make to come forth animals according to their species: domestic animals, creeping and savage beasts[1] according to their species.'

"And God made the savage animals according to their species, and the domestic animals according to their species, and all the creeping things of the earth, according to their species."

According to their species. This implies, according to Pozzi,[2] writing in 1874, that "He (God) created not only different groups, but in addition that He made up each group of a certain number of different species. The origin of species in the various animal families thus goes back to God."

"Hence," concluded also Mgr. Lamy[3] in 1883, "we must admit the distinction between species, and reject Darwinism." He is, however, careful to add that "we should not conclude from this that all those species regarded as distinct by naturalists are distinct in reality."

Here we already have a first concession.

Père Joseph Brucker[4] went still further in the matter of concessions, and expressed his mind clearly when he wrote in 1889:

"We have just seen that according to the formal testimony of Moses, the first production of plants as well as of the great groups of animals, is the work of a direct special intervention on the part of God, and the Biblical writer expressly points out that this production was by species." Then, after quoting the texts in question, he adds: "It is impossible not to see that the natural meaning of these expressions is that God on

[1] Strictly "beasts of the earth" (אֶרֶץ), but not of the cultivated earth (אֲדָמָה): the meaning might therefore be expressed by "wild beasts" in the widest sense of the word, or "animals of the jungle" in contrast to the "domestic animals" and to the "reptiles of the cultivated earth," such as mice, moles, etc.

[2] *La terre et le récit biblique de la création*, p. 282.

[3] *Comment. in Libr. Geneseos*, t. i, p. 119.

[4] "*Les jours de la création et le transformisme*," *Études*, t. xlvi, p. 591.

the third, fifth and sixth days created species, that is to say, vegetable and animal forms differing manifestly in organisation, aptitude, etc."

But Père Brucker goes on to say: " As for the rest, scholars who have the faith cannot feel themselves hampered in their work by the affirmation of the primordial distinction of species as formulated in the Bible. As a matter of fact, the sacred author does not at all specify in particular what species came directly from the hands of the Creator; nor does he say anything concerning their number. Botanists and zoologists accordingly remain entirely free to reconstruct the descent of each living kingdom according to their observations, and to reduce the number of real species and of primitive types as much as the progress of science may demand. What the Bible forbids (and true science also) is to affirm that transformism is the primordial and universal law of the development of beings."

What is to be thought of these statements ?

Before replying, I think it necessary to point out that the authors quoted belong to the Concordist school, which set itself out to establish a positive agreement between the Mosaic Cosmogony and that of Science. This was a fundamental mistake. For, although two truths cannot disagree with each other, it does not follow that two statements equally true but dealing with different subjects signify the same thing. Now the Mosaic Cosmogony (or rather the Cosmogony of the Priestly Code, since we are here dealing only with the first chapter of Genesis) and that of Science deal with different subjects.

The Sacerdotal Cosmogony considers the world as it appeared to the mind of the Hebrews; it affirms that the world, with all its perfections, is the work of the Divine Omnipotence, but it does not trouble itself with the question whether God made use of the activity of secondary causes for this end.

On the other hand, the Cosmogony of the sciences does not deny the ultimate action of the First Cause, but its proper

object is to find out the part played by the secondary causes which have led up to the present state of the universe, a state made known by minute observation, and one which has served as the starting-point of scientific inferences.

Everyone knows that this is the aim of the Cosmogony of the Sciences. In the course of the present conference we shall show that the precise object of the Sacerdotal Cosmogony is exactly what we have defined it to be.

Having pointed out these things, I now reply to the question asked above.

In the first place, the concessions of Père Brucker and Mgr. Lamy cannot be admitted, and I will even add that the opinion of Pozzi is too wide, for the inspired author attributes directly to God the origin not only of all the animal and vegetable species, but also of well-defined varieties, and specially of the domestic varieties.

On the other hand, there is nothing in the sacred text which allows us to conclude that the origin of species is due to what is known as a special intervention on the part of God.

First Proposition

The Hexameron attributes directly to God the origin of all species and all varieties which are clearly distinct, and in particular of domestic varieties.

Let us begin by establishing this, the first of the two propositions we have laid down.

We willingly admit with Mgr. Lamy that the substantive מִין (*mîn*), which the Septuagint translates by γένος and the Vulgate renders sometimes by *genus*, sometimes by *species*, should not be taken in the modern scientific sense of the term "species," but still less can it be taken in a wider sense. A "species" in the sense here used is a "species" in the ordinary common meaning of the word; that is, it signifies any clearly distinct variety, and it applies especially to the varieties of plants and domestic animals. These are accordingly the "varieties" whose origin is attributed by Moses to God.

If we wish to find out the sense in which a writer uses a word in a particular phrase, we must first of all know the general or dictionary meaning of the word, then, if there is still room for doubt, we shall discover exactly in what sense the author used the term by seeking to determine by the aid of the context the thought which the author wished to convey in making use of it.

Etymologically, the term מִין has the meaning of "section." In the Bible, it only occurs in the form of a composite word לְמִינוֹ (*l'mînô*) or the grammatical inflections of this,[1] terms which we have translated by "according to their species" in order to conform ourselves to ordinary usage. But in reality this composite term signifies "according to all the sections" or "kinds," that is to say, it involves all the subdivisions of the group in question. It is a collective term, as Buhl points out in the latest edition of Gesenius's *Hebrew Dictionary of the Old Testament:* "Art, aber nicht singular, sondern collective von den verschiedenen Arten die eine Hauptgattung umfasst"—"Kind; not singular, but collectively, of the distinct kinds comprised in one great class."

It is easy to verify this. Outside the books of Moses, the term only occurs in a prophecy of Ezechiel, and the above meaning suits this passage very well, but the figurative character of the prophecy hardly lends itself to a strict demonstration.[2]

It is quite otherwise when the word occurs in the Pentateuch. The expression is used very often in the legal texts referring to the distinction between clean and unclean animals.[3] Thus the law forbids, for instance, the eating of the hawk,

[1] לְמִינֵהוּ, לְמִינָהּ, לְמִינֵהֶם

[2] Ezech. xlvii, 10. This prophecy speaks of a torrent which goes forth from the Temple and descends towards the Dead Sea, and heals its waters so that fishers go there; for the waters contain, according to their species, fish like those of the great sea, in great abundance. The obvious meaning is that there will be in the Dead Sea all those kinds of fishes found in the Mediterranean Sea.

[3] Lev. vi, 14-16, 19, 22, 29; Deut. xiv, 13-15, 18.

according to its species, the raven according to its species, the lizard according to its species. On the other hand, it allows the eating of the locust, according to its species, etc. It is evident that in these legal enactments, whether prohibitive or permissive, the term in question signifies " of all kinds." Thus it is forbidden to eat a lizard, of whatever kind it may be, but it is allowed to eat all kinds of locusts. If we were to translate the term as Père Brucker does, the legal enactment would make no sense.

We come across the disputed expression also many times in the account of the Deluge. God commands Noe to take into the Ark a couple of all living things, of all flesh: of birds according to their species, of domestic animals according to their species, and of all the animals which crawl on the earth according to their species, " in order that they may preserve their life together with thee.[1] The same formula is repeated later on in the account of Noe's execution of the order received from God.

If the Ark of Noe had been a menagerie, destined for the teaching of systematic zoology, we should understand why God commanded the inclusion of a couple of each genus, of each family, and even of each order of animals belonging to the great groups in question. But the object was to preserve the animal kingdom as it then was, and this end could only be achieved if Noe took with him a couple of each one of the varieties which constituted that kingdom. It is, moreover, evident that there is especially question of the preservation of the varieties most useful to man, for it is because Noe found grace in the sight of God that He decided to preserve the animal kingdom. Now these are first and foremost the domestic varieties. Hence, at least in the case of the בְּהֵמָה (*b'hêmâ*), domestic animals, the term מִין includes the varieties.[2]

[1] Gen. vi. 20.

[2] We have been asked in this connection whether it is certain that domestic varieties were in existence in the time of Noe. We reply that such varieties certainly existed at the time of Jacob (cf.

Let us now come to a direct examination of the disputed passages of the first chapter of Genesis. The principal aim of the inspired author in this chapter is to teach that the whole world derives all its being and all its perfections from God alone, and thus to urge the people to worship the only true God and to turn away from the cult of false divinities. That this is the author's aim is clear from the text, and is admitted by all exegetes, believers and unbelievers. Moreover, as we have here a doctrinal interpretation which all the Fathers and Catholic tradition hold as certain, the truthfulness of this interpretation is binding upon the faith of Catholics. In order to show in the first place that God made the world from nothing the sacred author puts forward a formless mass as the immediate term or object of the creative action. But the Divine activity did not cease there: it is likewise from God and from Him alone that have come all those perfections which the world contains, and which are described as the work of the six days.

Now, I should like to ask whether the author would have attained his object if he had simply said, as Père Brucker maintains, that a certain number of species belonging to each of the groups enumerated have come directly from the hands of the Creator . . . nothing being said of the rest? Would he have achieved it if his statement had referred merely to the origin of some generic prototype, from whence have subsequently been derived other forms which scientists regard as so many distinct species, but which are not so in reality, as Mgr. Lamy would allow? Would he have attained it if his statement had only referred to the savage type of the species and not to the domestic kinds? You remember this passage in the "Hymn of a Child when Waking":

Gen. xxx, 31-43; xxxi, 7-12), and *a fortiori* at the time when the Priestly Code was written. That suffices, for every author naturally uses words in the meaning which they possess at the time he writes. Moreover, the "domestic species" do not exist independently of their varieties.

On dit que c'est toi qui produis
Les fleurs dont le jardin se pare;
Et que sans toi, toujours avare,
Le verger n'aurait point de fruits.

"People say that Thou producest the flowers which deck the garden, and that without Thee, the always niggard orchard would have no fruit."

Let us suppose that a creationist consistent with himself, like Père Brucker, were to say to this good child:

"No, no! Those who told you that have misunderstood the Bible. The good God did, it is true, make the wild flowers and trees. But the fine fruit and the beautiful flowers in your garden are not due to God, but come from kind genii whom we call horticulturists or gardeners. The good God did not make even one double flower, and as for fruit, the pears which He made are so hard and have such a nasty taste that you would not like to eat them."

What effect would this pious discourse have on the child? To whom would he display his gratitude for the future?

A fortiori, if the Hebrews had understood the categorical statements of Genesis in the diluted sense of our Concordists, they would thereby have been led, and not unreasonably, to divide their adoration between God and the genii or natural forces which were the causes of the excellent things not originated by the God of Israel according to their great prophet. And doubtless, it would not have been God who retained the greater share. And let no one object:

"Even adopting your interpretation, the Hebrews could have regarded the generative powers of plants and animals as genii." For the sacred author is careful to teach that it is at the command of God that the plants produce seed and fruit,[1] and that it is the Divine blessing which gives animals their fecundity,[2] and thus the author attributes to God, not only the first origin of each form but also its power of reproduction. It is therefore certain, according to the narrative of Genesis, that

[1] Gen. i, 11-12. [2] Gen. i, 22, 28.

C'est bien Dieu qui produit
Les fleurs dont le jardin se pare;
Et que sans lui, toujours avare.
Le verger n'aurait point de fruits.

(" It is indeed God who produces the flowers which deck the garden, and that without Him, the always niggard orchard would have no fruit.")

All this is true, or at least is implied in the first page of Genesis, only on the condition that we understand לְמִינוֹ (*l'mînô*) as signifying " of all kinds " in the way which we have explained. If Genesis, as Concordists maintain, spoke only of plants of the Devonian strata or coal deposits, of Batrachia of the Carboniferous rocks, or the reptiles of the Permian or Mesozoic systems, the primitive mammals of the Triassic strata or perhaps the first higher mammals of the dawn of the Tertiary period, and in addition, of the power which God gave to them of reproducing, each according to his species—then I really do not know how one could find in this narrative, whether one be a Transformist or not, the affirmation that God is the author of the plants and animals of to-day. If, then, I repeat, the Hebrews had understood the first chapter of Genesis in the Concordist sense, this narrative would not have sufficed to turn them away from the worship of false gods and natural forces. Nay, more: since it is clear that the inspired author wished to express himself in such a way as to attribute to the Divine causality all that really belongs to it, we should ourselves be led to confess, not perhaps as a truth of faith, but at the very least as a theologically certain conclusion, that the perfections of our actual flora and fauna are not attributable to God. It is, accordingly, clear that I was right in declaring the concessions of Mgr. Lamy and of Père Brucker to be inadmissible, and it seems certain to me that those who have recourse to concessions of this kind in order to render legitimate or to demonstrate a certain moderate evolution are on the wrong road. And the same would apply to any hypothesis which does not admit that the world whose completion

Moses describes is simply our own world as it was then present to his eyes.

St. Thomas Aquinas formally teaches that the present world is in question, inasmuch as he rejects as untenable all opposing views. Thus confronted by the hypothesis which would explain the work of the First Day by a light differing from that of the sun, and which disappeared after the creation of the latter on the Fourth Day, the Angelical Doctor sets it aside for the following conclusive reason: "This will not do (*sed istud non est conveniens*), for Scripture in the beginning of Genesis narrates the establishment of nature as it has lasted ever since. Hence, it must not be said that something was then made which subsequently ceased to be."[1]

It is regrettable that the Concordists should not have taken this weighty teaching into consideration. As usual, St. Thomas here shows himself the mouthpiece of common sense. If he had been listened to, certain people would have abstained from uselessly filling up piles of paper, and in fact from doing much harm to the Religion which they wished to serve.

But it is not necessary to have recourse to the authority of St. Thomas in order to establish that the work of the Six Days deals only with the present world, such as the Hebrews conceived it, and that it could not possibly deal with the various phases of the evolution of the world or of the earth as made known by astronomers and geologists. This follows clearly from the attentive reading of the first page of Genesis, and the numerous passages of Holy Scripture which obviously allude to this first page, and which thus form an authentic interpretation of it, make the thing still more evident. I cannot quote here all these passages, but I wish at least to run rapidly through the works of the Six Days as Genesis describes them.

The light which is spoken of in connection with the First Day is not the shining of the first planet or of the first satellite rendered luminous by the condensation of its cosmic matter.

[1] *Summa Theologica*, p. I, q. lxvii, a. 4, ad 2 m.; *De Potentia*, q. iv, a. 2, ad 8 m. in oppositum.

Nor is it the glow of fierce lightning which disturbed the heavy atmosphere of the primitive earth, as certain Concordists have suggested. The light of the First Day of Genesis, as the sacred text expressly tells us, is that which makes the day bright, and whose absence gives darkness to the night[1]—days and nights identical with our own days and nights now, as is clearly shown by the psalms and other parts of Holy Scripture.

The expanse, or solid partition (רָקִיעַ, *râquîa*), accurately rendered in the LXX by στερέωμα, and by *firmamentum* in the various Latin versions—this partition, destined to separate the waters above from the waters beneath, cannot be understood to mean the distinction of the primeval seas from the vapours and the clouds which remained in the atmosphere when the cooling of the earth's crust allowed the seas to appear on its surface. Nor is this solid expanse the system of physico-chemical forces which give to the universe its stability or solidity, as some Concordists have imagined from the fact that the principal idea implied by the term רָקִיעַ is that of solidity. This solid expanse is clearly described as the vault of the sky, in the midst of which God placed the sun, moon, and stars on the Fourth Day,[2] and which, in the belief of the Hebrews, protected the earth against the collapse of the higher waters, allowing the passage only of the waters with which God sprinkles the tops of the high mountains,[3] except when He opens wide the flood gates of the sky and the waters tumble down in torrents and inundate the earth. The text of Genesis is quite clear in itself, and numerous other passages of Holy Scripture reveal to us the opinions of the Hebrews concerning the nature of the firmament and the waters above it. This ought not to astonish us at all. God, in teaching men that the universe is the work of His might, had to express Himself after the customary manner of men, in order to be understood by them, as Leo XIII points out. There can be no doubt that Leo XIII, in formulating this principle, had particularly in mind the description of the firmament and the waters above

[1] Gen. i, 4 and 5. [2] Gen. i, 14-18.
[3] Ps. ciii (Hebr. civ), 14.

it which one oftens finds in Holy Writ. But St. John Chrysostom[1] and other Fathers anticipated the Encyclical of Leo XIII in applying this principle to the present case.

Are we free in the same way to interpret the distinguishing of land and sea by the collection of the lower waters into one place, described at the beginning of the Third Day, as signifying the appearance of the first continents, which, according to present-day knowledge, goes back at least to the time of the Archaean strata? In order to accept such a hypothesis, we should have to ignore Psalm ciii, which, describing the work of Creation as in the first pages of Genesis, gives us clearly to understand that the command of God gathered together the waters, which hitherto had covered the whole earth, into the place which He had marked out for them, and beyond which they were henceforth not to stray.[2] Evidently, then, it is the actual seas and continents of the present time which are referred to.

Let us now come to the organic kingdoms, which interest us more directly. Is it the vegetation of the coal seams that is described in the second part of the Third Day? Genesis speaks of herbs[3] producing seed, and of fruit trees bearing fruit, having its seed within itself. But up to a time much later than that of the coal deposits, or at least until the end of the secondary period or period of the reptiles, which Concordists are pleased to attribute to the Fifth Day, there were no fruit trees, and in the period when the coal beds were formed there were only Cryptogams, which have neither fruit nor seed, and Gymnosperms, of which the seed is not contained in a fruit. It is true that some Concordists, who have doubtless heard that Gymnosperms are found in coal, and that fir trees

[1] Migne, *P.G.*, t. iv, col. 222.

[2] Ps. ciii (Hebr. civ), 5-9.

[3] The term עֵשֶׂב is used to designate edible herbs as well as the grass of pasture land and the cereals. These two latter categories belong to the Gramineae, which did not begin to exist until long after the coal deposits, and it would be difficult to find a plant of that period which could be called an "edible herb."

are Gymnosperms, have thought it possible to put everything right by saying that Moses might well have described the fir cone as a fruit.[1] But, unfortunately for the Concordist, the Gymnosperms of our coal forests possessed nothing resembling fir-cones. Their seeds were simply bare, placed for the most part on widely-opened leaves. They were thus without any envelope, which even with the best will in the world one could describe as a fruit.

The Concordists endeavour to explain why the Bible puts the appearance of the sun only on the Fourth Day, saying that a sun which had scarcely emerged from its cosmic phase, and was in consequence not very luminous, or perhaps completely hidden by thick clouds, was precisely what was suitable for the development of the vegetation of the coal beds, and for its preservation in the form of coal. But it is ridiculous to suppose that the enormous quantity of calories stored up in our coal deposits have been derived from this sun of the Con-

[1] It is hardly necessary to point out that the term פְּרִי had not, for the Hebrews, the conventional meaning which modern botanists have attached to the term "fruit," but simply the sense which everybody gives to the word in ordinary language. עֵץ פְּרִי has the meaning of "fruit tree," a meaning well expressed by ξύλον κάρπιμον in the LXX, and by the *lignum pomiferum* of the Latin versions. We have been asked in this connection if one could not call a Gymnosperm with edible seeds a "fruit tree," since this term is sometimes applied to the walnut tree, chestnut tree, etc. We reply that Genesis is more precise still: it speaks of trees producing fruit having its seed within itself, and not of trees where seed and fruit (in the ordinary sense of the word) are identical. Neither the walnut tree nor the chestnut tree, nor *a fortiori*, the Gymnosperms, correspond to this description. This does not mean that the sacred author intended to exclude the Gymnosperms from the work of the third day: the 148th Psalm, which evidently is inspired by the first chapter of Genesis in its account of the work of creation, invites the cedars as well as fruit trees to praise their Creator. But the author of the Priestly Code speaks explicitly only of fruit trees properly so called, and this he evidently could not do if he intended to describe a vegetation like that of the coal deposits when no tree of this kind existed.

cordists. And as for the statement that the internal heat of the terrestrial globe sufficed for this, I do not think that this has much chance of being accepted by botanists.[1] As a matter of fact, the development of the powerful vegetation of the coal deposits needed a scorching sun, together with a climate which was constantly humid, like that found nowadays in the great forests of tropical regions; and the discovery of an immense wooded peat bog in Java, almost on the equator, has shown to demonstration that the rich foliage of the trees of the coal beds, as known to-day, was capable of casting on the land a shadow sufficient under a burning sun to ensure the conditions of humidity necessary for the preservation of the products of vegetation in the form of peat, which was later on transformed into coal. In addition, we have a proof that long before the period of the coal deposits, certain regions had been subjected to a desert climate, which presupposes a cloudless sky and a burning sun. It is not worth while stopping to examine, in connection with the Fourth Day, the delightful simplicity of certain Concordists who, from the fact that the sun is only a fixed star, think it quite natural to conclude that all the fixed stars must have developed from their nebular form to their full brilliancy at the same time as the sun itself.

After the Fourth Day, which the Concordists as a rule attribute to the Permian epoch, we come to the Secondary period, the great triumphal day for the Concordists. For it was on the Fifth Day that God said, " Let the waters swarm with crawling beings having the breath of life, and let the birds fly above the earth and under the expanse of the heavens. And God created the great sea monsters and all the moving animals with which the waters swarm, according to their species, and all the flying things having wings, according to their species."

[1] We know, as a matter of fact, that the transformation of inorganic matter (water and carbon dioxide) into organic matter (starch) in the green parts of plants necessitates the action of the sun's rays: the surrounding temperature, however elevated, cannot act as a substitute.

"Is it possible," cry the Concordists, "to describe better the Secondary period, the period of reptiles and especially of gigantic reptiles, breathing air by nature, some living in the water or at any rate capable of swimming, others flying in the air after the manner of birds? Can anyone deny after this that Moses is a faithful historian of the geological periods?"

Alas! this excellent argument is simply based upon plays on words. The term נֶפֶשׁ (*nephesh*) has, indeed, like the Greek ψυχὴ, the primitive meaning of breath, but it has also, like the Greek, the derivative meaning, which later became the strict literal sense, of "vital principle." This is particularly the case when it is joined to the term חַיָּה (*hhayiâ*) = life. This composite expression נֶפֶשׁ חַיָּה (*nephesh hhayiâ*) literally "breath of life," also signifies by antonomasia "animal," and this is the case here. As for the term שֶׁרֶץ (*sheretz*) which is translated as "crawling being," it does not exactly indicate the movement of crawling, but rather applies to any terrestrial or aquatic animal which moves about otherwise than on long paws. The *sheretz* of the waters referred to here comprise all animals which swim in water—not on the surface, but in the water—as is clear from the text of the Law which distinguishes between those which have neither scales nor fins from those which have.[1] Accordingly, we are dealing with fish, in the wide and common sense of the word. No serious exegete doubts nowadays that the animals in question are the same as those described in verse 26 under the name of דְּגַת הַיָּם (*d'gath hayiâm*), the fishes of the sea. Mgr. Lamy, although a convinced Concordist, was too good a Hebrew scholar not to recognise the thing as evident.[2] On the other hand, the term "reptile" does not mean for a naturalist a crawling animal, and this is especially true of the reptiles of the secondary epoch.

Why, then, did the author of the Hexameron use this circumlocution, instead of speaking simply of "fishes"? The answer is easy to discover: the author was motived by considerations of literary elegance. He had written higher up "Herbescat

[1] Lev. xi, 9-12. [2] *Comment. in Libr. Geneseos*, t. i, p. 127.

terra herbulam" and "herbas sementantes semina," and later he writes: "Let the flying things fly." In the same way here, taking advantage of the double sense of the verb שָׁרַץ (*shâratz*), which signifies at the same time "swarm" and "wriggle" or "squirm," he writes: "Let the waters swarm with swarming animals," or "Let the waters wriggle with wriggling animals," a play of words which I have endeavoured to render, although imperfectly, by translating: "Let the waters swarm swarming animals."[1] But as the author had foreseen the abuse which would be made in the nineteenth century of his literary playfulness—and the Holy Ghost must have foreseen it—he was careful to express himself in such a way as to refute the Concordist interpretation in advance. For, on the Fifth Day, he is not content with mentioning as on the Third or Sixth Day the production of the living groups in question according to their species, which in itself signifies, as we have seen, "of all kinds." Here he makes use of a pleonasm: "And God created . . . all the wriggling animals with which the waters swarm, according to their species, and all the winged fowl, according to their species." Now, if we are to believe the Concordists, none of the animals which thread the waters to-day formed part of the work of the Fifth Day. And the same would be true of the birds, for, according to naturalists, the birds of to-day no longer possess teeth, and thus differ from the birds and other winged creatures of the Mesozoic period.

But, leaving aside this consideration, let us remark simply that the Hexameron puts the appearance of fishes on the Fifth Day. Now the Devonian, Carboniferous, and Permian strata already possess very fine ichthyological fauna, so much so that these periods have sometimes been together designated as the era of fishes.

We could stop here, for I do not think that one must be very learned in paleontology to realise that the mammals of the beginning of the Tertiary epoch are not divided into domestic animals, savage animals, and animals crawling on the earth.

[1] See p. 25

One might object that the first part of the Sixth Day extends as far as the creation of man, and that the animal species destined to become domesticated must have existed then. I therefore add that the greater part of our species of domestic mammals—and I use the term " species " here in contrast to " simple variety "—the greater part are the results of human industry, and in consequence are posterior to the appearance of man. It is true that their origin is lost in the night of prehistoric times. But, nevertheless, in the case of some of them, we have been able to reconstruct, little by little, the mechanism of their production.

Perhaps those who have kept themselves *au courant* with the exegetical or geological sciences will reproach me with having delayed too long in showing the inanity of the Concordist theories. They know, in fact, that these theories exist nowadays only in name, and that their partisans have come to admit, by concession after concession, that the day-periods do not correspond to the first appearance of the plants or groups of animals assigned to each day, but to the time during which these groups have most developed; that the day-periods may also overlap; lastly, that the veritable history of the universe gives no more support to the number six than to any other, the number six having been chosen by the Holy Ghost simply in order to uphold the rest on the Sabbath day. But the Concordist theory has been taught to the great majority of us by our Professors of Religion or of Apologetics, and it is still preserved in the manuals of Apologetics which are frequently put in the hands of the younger generation. That is why I have thought it useful to point out in a few words that it is untenable in any of its forms. The donkey had to kick the dying lion.[1]

In any case, I think I have now established that the detailed examination of the narrative of the Six Days confirms what we had already gathered from the consideration of the principal intention of the author and from the study of the meaning of the term " secundum speciem suam." In other words,

[1] Phaedrus, l. i, fol. 20.

the first chapter of Genesis attributes directly to God the origin of all the forms of the flora and fauna of the present time, including the domestic varieties. Of course, Moses does not give a complete catalogue of this flora and fauna, but if his statements deal explicitly only with the groups which most concerned his immediate readers, it is, nevertheless, clear that they extend implicitly to all existing forms. As we have seen, this would not be the case if we adopted Père Brucker's translation: God made a certain number of herbaceous plants, a certain number of fruit trees, etc. I say " all existing forms," for Moses speaks of the actual world, the only one with which his readers and he himself were acquainted, and the Holy Ghost did not wish to teach through Moses that there had already existed some forms which have since disappeared. It is none the less true that since science has brought to our knowledge the existence of fossil forms, we are bound to extend to them the same conclusion. I think, therefore, that I am justified in saying that the infallible teaching of Genesis obliges us to attribute directly to God the origin of all the vegetable or plant forms, whatever they may be, whether they are called species or varieties.

Second Proposition

The sacred text does not justify the conclusion that the appearance of species was due to a special intervention on the part of God.

It seems at first sight that the conclusion enunciated at the end of our last section goes directly counter to our main thesis, and compels us to abandon all theories of natural evolution, even in a modified form. This would, indeed, be the case if " evolution " meant only atheistic and materialistic evolution. But scientific evolution has nothing in common with these unphilosophical theories, and in this volume I am discussing Darwinism as Darwin held it, which is a scientific theory.

Now if we study the sacred text, whether trusting to our own lights or aided by the teaching of the Fathers, we shall

come to the conclusion which I have set out in my Second Proposition—namely, that there is nothing in the sacred text which justifies the conclusion that the appearance of species was due to what is known as a special intervention on the part of God.

In order to establish the truth of this proposition, we shall first of all examine the value of the terms which the Sacred Author employs in attributing the origin of vegetable and animal forms directly to God; after that we shall consider whether the context really does compel us to admit the special Divine interventions, which some have maintained.

A.—Value of the Terms attributing the Origin of Vegetable and Animal Forms directly to God.

That the terms attributing to God the origin of vegetable and animal forms do not exclude the intervention of secondary causes already follows indirectly from what we have said concerning the origin of domestic varieties, which Holy Scripture ascribes to God, just as much as that of the wild species. But it is quite easy to establish the proposition directly by calling attention to the fact that the Bible constantly ascribes to God all the phenomena of nature, without exception, and in terms no less expressive than those found in the first chapter of Genesis.

If it rains, it is God who rains from the height of heaven.[1] It is God who sends the wind,[2] who causes the snow to fall like tufts of wool, who scatters hoar frost like ashes, who when it hails casts forth ice in tiny fragments, and it is likewise God who sends the intolerable cold of winter. Then, at His command, and as a result of His breath, ice and snow melt, and the waters begin again to flow.[3] It is God who forms the child in the womb of its mother from its very first beginning to the complete organisation of its body,[4] and it is God again

[1] Gen. ii, 5; vii, 4; Exod. ix, 18, etc.
[2] Exod. x, 13, 19; Numb. xi, 31; Ps. cxxxiv, 7, etc.
[3] Ps. cxlvii. [4] Job x, 8-12; II Mach. vii, 21-23.

who draws it forth from its mother's womb and brings it to the light of day.[1] If the locusts destroy a country, it is because God has ordered them to do so;[2] it is God who sends the wild beasts which devour cattle;[3] it is God who leads on the Assyrians and the Chaldeans against Israel and Juda,[4] just as it was also He who sent Joseph into Egypt for the salvation of his brethren;[5] and, if one man accidentally kills another, it is God who puts the latter in the hands of the former.[6] In the terrible phenomena of Nature the sacred writers see a special manifestation of the Divine power which wields them according to the Divine pleasure. It is God who excites the winds of the storm which lift up the waves to the sky and send them down to the abysmal depths, and it is also He who, giving ear to the prayer of the sailors, calms the storm and silences the roaring of the waves.[7] It is He who flings forth the lightning,[8] and the thunder is the thunder of God.[9] Earthquakes and volcanic eruptions are depicted as the effects of His wrath.[10] And when in the days of Noe there happens the most terrible of all natural phenomena in the memory of man, and huge tidal waves (probably the aftermath of the final partition of the ancient continent of Gondwana), accompanied by torrential rains,[11] as always happens in such cases, flood all the land of Mesopotamia,[12] it is God who sends the waters of the deluge

[1] Job x, 18. [2] II Paral. vii, 15. [3] Lev. xxvi, 22.
[4] Deut. xxviii, 49; IV Kings xxiv, 2; II Paral. xxxvi, 17; Isa. vii, 17; Jer. v, 15
[5] Gen. xlv, 5. [6] Exod. xxi, 13.
[7] Ps. cvi, 25-29.
[8] Exod. ix, 23; II Kings xxii, 15; Job xxxviii, 35; Ps. xvii, 15, etc.
[9] Job xxvi, 14; Ps. lxxvi, 19; Ps. ciii, 7; Eccli. xliii, 18.
[10] Gen. xix, 24, 28; cf. Ps. ciii, 32.
[11] Suess, *Das Antlitz der Erde*, vol. i, p. 25, *seq.*; Raymond de Girard, *La théorie sismique du déluge*; idem, *Le caractère naturel du déluge.*
[12] See especially on this question: A. Motais, *Le déluge biblique devant la foi, l'écriture et la science*; Ch. Robert, "*La non-universalité du déluge : réponse aux objections*" (*Revue des Quest. Scient.*, t. xxi, pp. 137-178 and 409-468); idem, "*Encore la non-universalité*

upon the earth,[1] and it is God again who, to end the cataclysm, closes once more the wells of the great deep and the flood gates of heaven.[2]

And all this is very true, for it is strictly true that everything happens as ordained by Providence, and that no secondary cause can act except in virtue of the activity derived from God, and under the actual influence of the Divine causality. God is the Universal Cause, so that there is no principle of activity which does not derive directly and actually from God all that it has, and nothing causes except as moved by God, and in accordance with the designs of His Providence. Thus, all that is real in an effect, or even in the action of the secondary cause producing it, is completely and immediately attributable to God.

This explains why all the terms used by Holy Scripture in dealing with effects produced by God alone without any intervention on the part of a secondary cause serve equally well, as St. Augustine remarks, to express the activity of God in the phenomena of Nature. Thus it is impossible to determine by means of the language of Holy Writ alone whether an operation is the work of God alone, or whether His omnipotent goodness has allowed a secondary cause to share His activity. There is an exception in the case where the secondary cause is explicitly referred to, but then Holy Scripture is careful to make it clear that the created cause derives from God all its causality, as we have seen in the case of the fecundity of plants and animals; and other texts of Holy Scripture can be found which ascribe the same effects directly and immediately to God. It is thus impossible to determine from the language of Holy Scripture alone whether the world, organic or inorganic, was brought to the state of perfection described in the

---

du déluge" (*ibid.*, t. xxii, pp. 488-512) (these two are in reply to articles by Père Brucker in the same *Revue*, t. xx, 123-167, 437-486, and t. xxii, 23-63); Raymond de Girard, *Le déluge devant la critique historique.*

[1] Gen. vi, 17.

[2] Gen. viii, 1, 2.

Hexameron by a series of special interventions on the part of God, or instead by Divine action operating as in the phenomena of everyday life by created causes which act according to the natural laws God has impressed upon them. It belongs to the Christian tradition and to the sciences of observation to pronounce upon the point, and we shall see in the next conference that the Christian tradition did not wait for the answer of the natural sciences, but itself gave a response to the question much more radical than these have done.

B.—Examination of the Argument from the Rest on the Seventh Day

There is an apparently much more serious objection to the theory of evolution, based on the context. Père Brucker is the author who, to the best of my knowledge, has put forward the argument in the most telling way.

Père Brucker starts by laying down the principle that the succession of the Six Days of Genesis must be understood as a real succession in time. Not that he regards the Six Days as real days: on the contrary, he holds that one may, and indeed must, given the data of geology, understand them as six periods. But what he holds to, and maintains that we must hold to, is the successive character of the works attributed to the Six Days. He thinks that to each "day" of Genesis corresponds the first appearance of the work assigned to it, although this work may have developed during the days or periods following.[1] The passage aims at giving us the "order of the first appearance of the great classes of beings."[2]

Père Brucker then endeavours to establish that from this "real succession" follows the necessity of admitting at least as many direct special interventions as there are works enumerated in the Mosaic cosmogony. I think that the argumentation of the learned Jesuit will lose none of its force if we content ourselves with summing it up in the following form:

[1] *Etudes*, xlvi., pp. 584-588. [2] *Ibid.*, p. 587.

"It follows from the sacred text that God produced successively the characteristic works of the Six Days.

"Now the sacred text affirms that when these Six Days had ended, God had finished His work, and rested from all His work.

"Therefore, God produced the characteristic works of the Six Days by special, successive operations, which were not afterwards repeated, and which, in consequence, cannot be confused with the action of His ordinary providence which has never ceased."

I think it cannot be denied that this argument has a very serious weight from the point of view of formal logic. The form of the argument, moreover, does not belong strictly to Père Brucker: it is borrowed from St. Augustine. But St. Augustine, by means of an argument of the same form only with a contrary major premiss, thought himself able to establish the theory of absolute natural evolution.

It is, therefore, above all important to see whether the major premiss of Père Brucker is solidly established. This is what he has to say on this point:

"It will be difficult to find strictly historical texts in the Bible if formulæ as expressive as those which Moses uses to describe the first production of things do not indicate an intention to narrate things as they actually happened. We must simply start by shutting up the sacred volume and forgetting the terms used by the inspired author if we are to persuade ourselves that he had no such object, and that he simply intended to make the doctrine of creation plain with the help of a poetic fiction, or a kind of dramatic presentation."[1]

Well, frankly, it seems to me that Père Brucker might have been a little less sweeping in his statements, or at any rate, to call things by their name, he might have been a little less insulting towards some of the great luminaries of the Church. For the authors whom he treats in this way—he previously mentions them himself[2]—are none other than Origen, Athana-

[1] *Etudes*, pp. 589-591. [2] *Ibid.*, p. 572.

sius, Augustine, and Thomas Aquinas. And there are very many others, but I confine myself to mentioning those names quoted by Père Brucker himself. Does the reverend author really think that these great men shut up the sacred book, and forced themselves to forget its words, when they wished to interpret them? Could he be unaware that St. Augustine, the greatest of the Fathers of the Church, and the one whom Leo XIII elevates above all others on account of " his admirable clearsightedness in discovering the meaning of the Divine word," studied the first page of Genesis for more than thirty years, and scrutinised the meaning of each word and of each phrase, seeking to make it clear by means of other passages of Holy Writ, and ardently begging God to reveal its true meaning to him? Is he not aware that this great Father examined and pondered over all the interpretations attempted before his time, seeking to understand the text in a sense as literal as possible, and that, in spite of all his efforts, he was unable not to see that the sacred writing says exactly the contrary of what Père Brucker would make it say? And St. Thomas Aquinas, who carefully weighed the different opinions on the subject, is he also quite bereft of common sense in the eyes of Père Brucker? It is true that St. Thomas regards only as more reasonable[1] the interpretation which Père Brucker looks upon as so absurd. But if St. Thomas does not absolutely reject the interpretation which admits a real succession in time, at any rate he points out that this interpretation necessitates other propositions of the Hexameron being taken in an extremely unusual sense: for instance, that by the formation of the sun on the Fourth Day would have to be understood simply that the sun then commenced its own movement along

[1] *In II Sent.*, Dist. xii, a. 12, cf. *ibid.*, a. 3 *in fine corporis articuli*. In the latter passage St. Thomas shows that one can take the succession of the works of the six days in a figurative sense without thereby admitting the idealistic explanation which St. Augustine put forward somewhat dubiously in his *De Genesi ad litteram*. This is precisely the thesis which we are defending here.

the ecliptic.[1] It is also well to add that, if the conviction of St. Thomas is less absolute than that of St. Augustine, this is perhaps because St. Thomas had not read the Greek version of Genesis, which in the case of the first chapters is much less inexact than the Latin Vulgate.

In any case, even supposing—contrary to my own opinion—that the question at the time of St. Augustine was not so clear as this great Doctor thought, that is not the case to-day. If the progress of the exegetical and natural sciences has compelled the abandonment of one or other of the arguments by which the ancient Fathers endeavoured to show that the succession of days is purely figurative; on the other hand, this progress has given more force to the majority of their arguments, and has added to them new proofs which are altogether demonstrative. We have already said sufficient to show how the interpretation of the Six Days as a real succession fails to square with the geological sciences. But it is not these sciences alone which are concerned, and in order to make the matter clearer I shall henceforth leave geology aside and regard the question simply from points of view which were open to the Fathers. I shall not, however, confine myself to translating their arguments. I have gathered them together scrupulously, especially from the writings of St. Augustine, but I shall give them sometimes a more modern form.

Let us accordingly shut up the great book of the earth, let us forget all its information concerning the history of the past,

[1] *Summ. Theol.*, I, p. q. lxvii, a. 4, ad 3; cf. *In II Sent.*, Dist. xv, q. 1, a. 1 et 2. Here we gather that the special actions of the stars depend upon their movements, conjunctions, and other spatial relations. The two expressions made use of by St. Thomas in the *Summa Theologica* (*l.c.*, ad 2 et ad 3) are accordingly used synonymously, and are tantamount to saying that if we admit a real succession of the six days, then the stars, which had already existed since the first day and which shared in the general motion of the heavens, received nothing new on the fourth day except their own proper movements upon the heavenly sphere. See also *De Potentia*, q. iv, a. 2, where St. Thomas deals with the question in greater detail.

and in order to find out the true sense of Holy Writ, let us no longer keep before our eyes anything but the book itself. At the same time, let us study it without any preconceived idea, and be guided by the example of the Fathers.

The first question which presents itself is this: Can the Six Days of the Hexameron signify periods differing from our ordinary days?

To this question tradition replies negatively without exception. A good number of Fathers and Doctors interpret the succession of the Six Days in a figurative sense, but all the Fathers and Doctors, all the theologians and exegetes who previous to the nineteenth century admitted either as true or as probable a real succession in time, understood this as a succession of six ordinary days, neither more nor less.

I do not wish to attribute a dogmatic significance to this unanimity. The question is not one of faith, and, during part of the nineteenth century, the hypothesis of day-periods was widely accepted, since it was thought that by this means the teachings of the Bible could be made to harmonise with those of geology. Moreover, the Biblical Commission has left the question open.

But modern exegesis has examined the matter afresh, and has fully confirmed the judgment of antiquity, thus showing once again how dangerous it is to have preconceived ideas when reading a text.

Modern exegetes have, then, examined with great care, first the innumerable texts of Holy Scripture containing the word יוֹם (day); they have analysed the meaning of this term in each of the passages in question, and classified the different meanings. The result of this long task has been that there is not a single passage which can be used to justify the hypothesis of day-periods. It is true that the term may refer the reader to a point of time, determined or undetermined, as in the expressions: "In the day when Jahveh Elohim made heaven and earth"; "In the day when I have called upon Thee thou hast heard me"; but the expression is then simply a synonym of "when." The term יוֹם may

also refer to a state: "Hide not from me Thy face, in the day of my distress," says the psalmist; and I might add many more similar instances. But the word יוֹם when used in the singular to designate a certain *length* of time, whether this length be determined or not by the context, can only signify one of two things: either what we call a day of twenty-four hours, or else the time which separates the rising from the setting of the sun. And when I say "in the singular" I mean the grammatical form of the singular, and I do not exclude the case which so often happens in Hebrew, when the singular form is used in a collective sense. As for the use of the word in the plural יָמִים (*yâmîm*) this only strengthens the conclusion. To sum up: the word יוֹם has exactly the same meaning as the word "day" in common English. The only periods of time which the term יוֹם can signify are, therefore, either the day of twenty-four hours, or else the part of this period during which the sun remains above the horizon.

A fortiori one cannot describe a sequence of six successive periods as "six days," nor can one number them as "first day," "second day," etc., unless the word "day" is being used in its strict sense.

Moreover, the sacred writer has taken pains to make his thought still clearer by adding after the description of the work of each day: "Then came an evening, then came a morning: first day; . . . then came an evening, then came a morning: second day; . . ." and so on.

There is, then, no possible doubt as to the meaning of the Six Days: the sacred text gives us the succession of six days properly so-called. God finishes His daily work each evening, and starts again on the morning of the next day, right up to the Seventh Day, when God rests. The whole question is to know if this description must be taken in the literal sense, or whether the chronological element ought to be considered as belonging to the figurative elements of the narrative. That is how the question has presented itself from the times of the ancient Fathers right up to the second quarter of the nine-

teenth century, and, indeed, it cannot reasonably present itself in any other way.

Some Concordists will perhaps say:[1] "That is exactly how we understand the matter. We are willing to grant that so far as the grammatical and dictionary meaning of the words is concerned, the passage speaks of six natural days, and we interpret these days figuratively, just as you do. But we maintain that what is figured by each of these days is a period, one of the days of the Divine week, working days which have not necessarily the same duration as the working days of man. But we retain at least the successive character of these periods, and thus our interpretation is not so daring as that of St. Augustine."

This attitude is certainly more plausible. As soon as it is conceded that the term יום does not signify period, either by its literal sense, or by synecdoche or catachresis, but is understood in a metaphorical or allegorical sense, we are in agreement to start with, and I do not deny that we might endeavour to find out, as St. Augustine did, whether, beyond what it naturally signifies as part of a figure, the term may not also possess some hidden meaning.[2] But St. Augustine

[1] The attitude described is taken up by Père Brucker, for instance.

[2] The opinions of St. Augustine on the mystical sense of Holy Scripture varied a great deal during his long life, and he never put forward any one of them unhesitatingly. This hesitation lasted right to the end of his life, as may be seen in the notes which he wrote for the revision of his works, under the title of *Retractationes*, and in the publication, almost on his death-bed, of the *Liber imperfectus*. On the other hand, right from his first work on Genesis (*De Genesi contra Manichaeos*) up to the end, he was evidently firmly convinced of this fact, that the six days of the Hexameron cannot represent a real succession of the works of creation. His conviction on this subject simply became still firmer as the deepening study of the sacred text made the evidence for it clearer. It is accordingly a serious mistake to think that this constant teaching of St. Augustine, which he bases upon unshakable proofs, depends in any way upon the ideas hesitatingly put forward in the *De Genesi ad litteram*. St. Thomas Aquinas made the matter quite clear by showing (*In II Sent.*, Dist. xii, q. i, a. 3) that one can hold that the

endeavours to discover this meaning by examining the sacred text, and he then puts forward modestly the meaning which he thinks he can find there, without venturing to affirm its exactitude, lest he should seem to substitute his own thought for that of the Holy Ghost. I find nothing like that in the Concordists. If we do not admit their hypothesis, we must have shut up the sacred volume and forgotten all that it contains. And yet their hypothesis is purely arbitrary, and has no foundation in the sacred text. Since they admit that the "days" belong to the figurative element of the Hexameron, what right have they to affirm that they represent a real succession? And then, are they certain that they are less daring than St. Augustine when they ascribe a real succession in time to the working days of God?

This brings us to St. Augustine's first argument[1] against the reality of succession of the Six Days. If we modify its form a little, in order to leave aside what is foreign to our subject, we can set it out as follows:

I. In the commencement of Genesis, God plays the sole part, and He acts, speaks, and thinks in time, after the manner of a man. He says: Let there be light, and the light comes into existence. Then He sees that the light is good. Then He separates the light from the darkness, and He calls the light "day," and the darkness "night." Then comes the evening, then the morning, and God recommences a similar series of acts, and so on for six consecutive days. Short of

---

succession described in Genesis corresponds in reality simply to a classification, without thereby admitting the ideas of St. Augustine concerning the angels' knowledge of the works of creation. It is regrettable that modern writers should have lost sight of this wise remark of the Angelical Doctor.

[1] In what follows, we leave entirely aside the arguments of St. Augustine which show directly that the days of the Hexameron cannot be days of twenty-four hours. Still, in accordance with what we have said above, these arguments do indirectly prove that these "days" cannot mean a real succession of any kind. St. Augustine clearly realised this.

gross error concerning the nature of God, it is clear that all the anthropomorphic elements in this presentation—dramatic presentation, if you like—are figurative. And the chronological element is obviously figurative in the first place, for God is not in time.

It will doubtless be objected that God is represented in the same way in passages of Holy Scripture which are historical, even so far as their chronology is concerned. Yes, replies St. Augustine, but then God is not the only actor. If there is a man to hear His word, it is true in a certain sense[1] that God speaks in time, for it is in time that the man perceives the Divine word. But if there be no creature whatever existing in time to hear, it is not true in any sense that God speaks in time. Now the succession of the thoughts and words of God, and the realisation of His different works, succeed one another in such a way in the narrative, that the Holy Spirit seems to warn us thereby that all the chronological element of this narrative is figurative.

II. The second argument which goes against the interpretation of the Six Days in a literal sense, and in fact, in any sense which implies a chronological succession, has at all times struck the writers who have devoted themselves to the question.

How can one admit that the light—not any light, but the light of day and its alternation with the darkness of night, as well as the succession of evening at nightfall and morning at daybreak—how can these have existed before the sun, the cause of these phenomena, had been called forth into existence?

St. Basil,[2] one of the first who, abandoning the teaching of the earlier Fathers in the matter, defended the literal meaning of the days of the Hexameron and their real succession, endeavours to explain the difficulty by saying that the primitive light, by expanding and contracting periodically, produced

[1] It is true, in exactly the same way that it is true to say God created or produced things in time.

[2] Ὁμιλίαι εἰς τὴν Ἑξαήμερον, I, No. 8; VI, Nos. 2 and 3. (Migne, *P.G.*, t. xxix, col. 48 and 120 *seq.*)

the alternation of days and nights, until the Fourth Day, when, God having produced luminaries which served as a support and as vehicles for the pre-existing light, the succession of days and nights began to take place as at the present time.

The homilies of St. Basil on the Hexameron, delivered in the Cathedral of Cæsarea in Cappadocia, aroused a storm of criticism in the very enlightened world of Asia Minor. It was objected, in particular, that the phenomenon supposed by St. Basil, even if it were possible, would have given rise to neither evening nor morning, as the latter is not the appearance of any light, but supposes the rising of the sun in the east, just as the evening supposes its setting.[1] St. Augustine,[2] writing forty years later on the subject, added—and he was followed on this point by St. Thomas Aquinas[3]—that it was not natural for light to expand and contract in this way, and we cannot suppose a miracle at the very first beginning of things.[4] Moreover, add the two holy Doctors,[5] of what use would be the succession of light and darkness in this strange way, since there was at the time no living being which it could benefit?

St. Basil died on the 1st of January, 379. His brother, St. Gregory of Nyssa, called upon to take up the defence of the thesis of the Six Days, decided that it was necessary to give up this much too unscientific explanation. He holds[6] that the succession of primitive days and nights, evenings and mornings, was due to a luminous mass, with a diurnal movement like that of the sun, and which later on split up and so gave birth to distinct masses, the sun, moon, and stars. This breaking-up was completed only on the Fourth Day: that is why Genesis attributes to the Fourth Day the formation of the different stars.

[1] Cf. St. Gregory of Nyssa, Ἀπολογητικὸς περὶ τῆς Ἑξαημέρου (Migne, *P.G.*, t. xliv, col. 63 C); cf. St. Augustine, *De Genesi ad litteram*, lib. I, cap. xii.

[2] St. Augustine, *l.c.*, cap. xvi.

[3] *Summa Theologica*, I, p. q. lxvii, a. 4, ad 3.

[4] St. Thomas, *ibid.*; St. Augustine, *De Genesi ad litteram*, lib. II, cap. i.

[5] *Loc. cit.*

[6] *Op. cit.*

I do not know if St. Augustine was acquainted with the text itself of St. Gregory, or whether he only knew of it at second hand. In any case, the explanation which he describes seems to me to differ slightly from that of St. Gregory. However this may be, we can oppose to St. Gregory the reply of St. Augustine:[1] " I am afraid that if I were to say such a thing people would laugh at me, and point out that when it is night for one part of the earth it is day elsewhere. Are we, then, to imagine God placed in a certain spot so that it is evening for Him when the sun goes away to illuminate other parts of the earth ?"

This argument, very topical since it brings out once more the anthropomorphism and consequently the figurative character of the successive phenomena as described in Genesis, is no longer needed to-day. For I question whether many astronomers would be disposed to admit that when the earth had reached the state of a dark planet, there was in the heavens a single luminous body, which later broke up to form the sun, moon, and all the stars. I do not say anything about geologists, as I have promised to forget geology.

III. The third argument is derived from the work of the Second Day, when God, according to the sacred text, made a solid expanse separating the waters above from the waters beneath, and it is in this solid expanse which He called Heaven that the stars were placed on the Fourth Day.

This text has embarrassed all interpreters. It would be a waste of time to recapitulate all the explanations that have been suggested. The only satisfactory interpretation is that which Leo XIII has suggested,[2] and which we have adopted. God, wishing to teach men that the universe is the work of His might, had to express Himself after the ordinary manner of men in order to be understood by them: that is why He spoke according to the appearances and according to the opinions of those to whom the Creation narrative was imme-

[1] *Op. cit.*, lib. I, cap. x.

[2] By inviting us to apply to particular cases the general principle of interpretation which he laid down for us.

diately addressed. He was obliged, then, to describe the sky as a solid vault. But, as a matter of fact, this solid expanse or vault does not exist in reality, and, since the stars which dwell in it were only formed on the Fourth Day, the work of the Second Day reduces itself to nothing at all. That does not matter if we admit that the succession of days is purely figurative: what it signifies is simply that God is the Author of all the perfections of the world which we see, and among these perfections, which Genesis describes in the order of the Six Days, it is natural to include this splendid vault which seems to cover us. But if we admit a real succession, then we are obliged to say that, during the period which Genesis calls the Second Day, God did nothing at all.

IV. Of the other arguments which St. Augustine sets forth I will only give one, but it is one upon which the Bishop of Hippo is very insistent. If we admit that the first chapter of Genesis means to state that the works of the Six Days really succeeded one another in time, according to the order indicated, then we are compelled to admit a flagrant contradiction between the first and the second chapters.

St. Augustine establishes this conclusion from the LXX version and the Latin translation of this passage. But it is still more evident from the original Hebrew text. As we shall have to examine the second chapter of Genesis in detail when we deal with the origin of man, I will confine myself for the moment to set out this contradiction in the form of a comparative table (see p. 58).

As will be seen, the contradiction is so apparent that it is impossible to suppose that the Compiler did not notice it. Therefore, either he did not take the responsibility for the chronological elements of the narrative, or else he considered these chronological elements as figurative in the original documents. The dictates of common sense, and those of the Biblical Commission, tell us that it is the second hypothesis which we must adopt. And in deciding that the primitive authors understood the chronological elements in a figurative sense, the inspired author did not err.

Hexameron (Gen. i-ii, 1-4a).	*Jahvist Document* (Gen. ii, 4b-iii).
CREATION: Earth's surface covered entirely with water.	Earth dry and bare.
First Day: Light.	
Second Day: Solid vault of heaven.	
Third Day: Separation of land and sea; creation of all the plants.	Institution of rain. The first man.
Fourth Day: Sun, moon, and stars.	Plants which are useful and pleasant to man (Terrestrial Paradise).
Fifth Day: ALL[1] fishes and ALL[1] birds.	ALL[1] terrestrial animals and ALL[1] birds
Sixth Day: All terrestrial animals; mankind (both sexes)	The first woman.
Seventh Day: God's rest.	Original sin. The earth brings forth plants harmful to man (thorns and thistles).

I think that these four arguments will suffice to show that the early Fathers were right in not waiting for the birth of geological science in order to recognise that the succession in time of the Six Days of the Hexameron must be taken in a purely allegorical sense, or, if you wish it, parabolic sense.

Our opponents urge, however, against our conclusion, two other passages of Holy Scripture. We read in Exod. xx, 8-11:

"Remember that thou keep holy the sabbath day. Six days shalt thou labour, and shalt do all thy works. But on the seventh day is the sabbath of the Lord thy God: thou shalt do no work in it, thou, nor thy son, nor thy daughter, nor thy man-servant, nor thy maid-servant, nor thy beast, nor the

[1] We write "ALL" here in capitals because the term כָּל is found in the sacred text; on the other hand, we write "all" in small letters where this is expressed only by the term לְמִינוֹ

stranger that is within thy gates. For in six days the Lord made heaven and earth, and the sea, and all things that are in them, and rested on the seventh day: therefore the Lord blessed the sabbath day and sanctified it."

And in chapter xxxi, vv. 15-17:

"Six days shall you do work: in the seventh day is the sabbath, the rest holy to the Lord. Everyone that shall do any work on this day shall die. Let the children of Israel keep the sabbath, and celebrate it in their generations. It is an everlasting covenant between Me and the children of Israel, and a perpetual sign; for in six days the Lord made heaven and earth, and on the seventh He ceased from work."

Therefore, say our opponents, the law of Moses bases the precept of the rest of the seventh day of the week upon the repose of God which follows the Six Days of the Hexameron. Now this foundation is lacking if the Hexameron did not represent a real succession.

Why? we ask. Is it not allowed to base a moral precept on a parable, when this parable has God for its author? What would become in this case of the evangelical teaching which consists in great part of parables?

Moreover, let us carefully analyse the logical value of this foundation. Exodus commands mankind to interrupt its work on the seventh day, imitating God who, after having worked for six days, rested on the seventh. Now the example given is evidently figurative, for God does not work, and does not rest in time. On any hypothesis, then, the precept rests on a figurative element. What does it matter after that if the world was really evolved in six days? What can it matter, above all, whether we arbitrarily divide geological time into six periods to which would correspond more or less vaguely the works of the Six Days of the Hexameron? The type proposed for the imitation of the Hebrews is not the world which developed, but God the workman who worked for six days and rested on the seventh, and so far as this type is concerned, the chronological element can only be figurative.

Nay, more. We have quoted the texts of Exodus according

to the Vulgate version. Would it be indiscreet to consult the Hebrew text?

The idea there signified is, indeed, the same as in Genesis, but the terms which express the rest of God are more expressive. While the verb שָׁבַת, which in Genesis expresses God's repose, signifies of itself simply that God ceased to produce, the term in the first text of Exodus (וַיָּנַח from verb נוּחַ) signifies in its primitive meaning 'to be put down' or 'to fall down,' then 'to lie down,' finally 'to rest oneself from exertion'; and it is this last sense which holds good when the verb has for its subject a living being described as having worked.

As for the second passage of Exodus, St. Jerome forgot to translate the last word in it. "For in six days the Lord made heaven and earth, and on the seventh he ceased His work" is his translation. So far it is all right, and the verb is the same as in Genesis, שָׁבַת, "he ceased." But the text of Exodus adds וַיִּנָּפַשׁ, *i.e.*, "and he breathed again." This verb נָפַשׁ is used in the Bible only to signify the rest necessary in order to recover from bodily fatigue. "This," says Père Delattre[1]—himself a Concordist nevertheless—"taken literally, constitutes the highest point of anthropomorphism." To sum up, the words in Exodus which are used to describe the repose of God signify a physiological rest, made necessary by physiological fatigue.

Here are some more instances: In Exodus xxiii, 12 there is also question of the sabbath, but here the legislator does not refer to God's rest but only to that of animals and men.

"Six days thou shalt work: the seventh day thou shalt cease" תִּשְׁבֹּת (we have here the verb שָׁבַת of Genesis), "that thy ox and thy ass may rest" יָנוּחַ (here is the verb נוּחַ used for the repose of God in the first of the texts brought against us), "and the son of thy handmaid, and the stranger may breathe again" וְיִנָּפַשׁ (this is the verb in the second of these terrible texts which were supposed to crush us).

I ask, then, concerning this day on which God rests like an

[1] *Autour de la question biblique*, p. 217.

ox or an ass, when He has need to recover His breath like a man exhausted by his work, is it or is it not an anthropomorphic figure? If it is so in the case of the Seventh Day, it cannot be otherwise with the first six. And if someone will show me what difference the substitution of day-periods to days of twenty-four hours will make in this connection, I will become a Concordist.

We see, then, that the Holy Spirit has left nothing undone in order to warn us that, to use the expression of St. Augustine, "the exposition according to the order of days has only the appearance of history."[1] To understand it otherwise would be to commit the same logical error as that which led the scribes and pharisees not to recognise Jesus of Nazareth as the promised Messiah because they would not understand that the prophecies which represented Him as a temporal king were figurative.

From what we have just said it follows that the starting-point, or, if you like, the major premiss, of Père Brucker is untenable. In consequence, the argument itself collapses.

And, finally, we can conclude that the Scriptural argument which was urged against the evolutionist theories is beside the point, even in the case of absolute evolution.

I say "which was urged." It will be noticed, perhaps, that I have limited myself to books already comparatively old. That is because I no longer know of anyone to-day who would be bold enough to uphold openly the thesis which I have attacked in my second point.[2] People usually content them-

[1] *De Genesi contra Manichaeos*, lib. I, cap. xxiii.

[2] Père Brucker himself seems to have returned to more moderate views. For he writes in 1907: "The difficulty concerning the appearance of the stars after the creation of plants collapses if the distinction of the days of Genesis is a purely ideal one, as one may allow with some Fathers: and it is not the only satisfactory way of solving it" (*L'église et la critique biblique, Ancien Testament*, p. 215). Now, as soon as one allows that the idealistic interpretation of the days of Genesis is a possible one, Père Brucker's argument against the theory of evolution can no longer be looked upon as demonstrative.

selves with pious wishes: "Be careful: at the very least, do not affirm anything. Darwinism has done so much harm! It has been so much exploited against religion! And then there is the question of man!"

We shall deal another time with this latter question. But why, then, has it been possible to exploit Darwinism so successfully against religion, if not because there have not been lacking Catholic authors who have compromised the Christian religion in falsely representing it as irreconcilable with scientific theories? And why has Darwinism kept certain scholars away from religion, if not because, seeing clearly themselves the truth of these theories, they have not even dreamt of studying the foundations of a religion which was made to appear to them as hostile to what they know to be the truth? In speaking in this way, I have before my eyes concrete instances, and I could also mention cases of scholars, and great ones at that, who have become converts because we ourselves have never been willing to listen to these timid recommendations.

And since we have based ourselves on the authority of St. Augustine and count upon doing so also in what follows, I wish to read in conclusion a passage from his *De Genesi ad litteram*, which can be applied, *mutatis mutandis*, as well to our Concordists as to those who oppose Darwinism in the name of religion, or seek to hinder Catholics from professing it openly:

"Often, in connection with the earth and the heavens, or other elements of this world, the movement, circuit, or still more, the magnitude of the stars and of the intervals separating them, or else in connection with eclipses of the sun and of the moon, the cycle of years and of times, the exact nature of animals, fruits, rocks, and many other similar things, it happens that a man who is not a Christian possesses a knowledge which is so profound that it is guaranteed by certain calculation, or even by experience. Now, here is a thing which is too disgraceful, too disastrous, and from which we must, above all, guard ourselves: a Christian speaks on all these subjects; he thinks that he speaks of them according to our Holy Scriptures;

yet every unbeliever may hear him rambling so much that in the presence of such great errors, the unbeliever cannot help laughing. And the real evil is not that a man is subjected to derision because of his error, but it is that to profane eyes, our authors (that is to say, the sacred authors) are regarded as having had such thoughts; and are also exposed to blame and scorn upon the score of ignorance, to the greatest possible misfortune of people whom we wish to save. For, in fine, these profane people happen upon a Christian busy in making mistakes on a subject which they know perfectly; how, then, will they believe these holy books? How will they believe in the resurrection of the dead and in the hope of life eternal, and in the kingdom of heaven, when, according to an erroneous assumption, these books seem to them to have as their object those very things which they, the profane, know by direct experience or by calculation which admits of no doubt? It is impossible to say what vexation and sorrow prudent Christians meet with through these presumptuous and bold spirits who, taken to task one day for their silly and false opinion, and realising themselves on the point of being convicted by men who are not obedient to the authority of our holy books, wish to defend their assertions so thoughtless, so bold, and so manifestly false. For they then commence to bring forward as a proof precisely our holy books, or again they attribute to them from memory that which seems to support their opinion, and they quote numerous passages, understanding neither the texts they quote, nor the subject about which they are making statements."[1]

In our next conferences, we shall see that St. Augustine upholds as certain the theory of the absolute natural evolution of living beings, from inorganic matter right up to the body of man inclusively. But the passage which I have just read will already justify the conclusion that if the great Doctor had belonged to the Rectoral Council of this University in 1909, he would have decided, as did our Deans, that for the sake of

[1] *De Genesi ad litteram*, lib. I, cap. xix.

the honour of religion the Catholic University could not abstain from joining in the celebration at Cambridge. And who knows if it is not due to the intercession of the holy Bishop of Hippo that we owe to-day the good fortune of having at our head the eminent exegete who, as Dean of the Faculty of Theology, supported with all the weight of his authority the project of having the University represented at the Darwin Centenary, and carried with him the unanimous votes of the Rectoral Council.

SECOND CONFERENCE

Darwinism in the Light of Tradition and Catholic Philosophy

IN my first conference I endeavoured to establish that the Scriptural objections against the theory of evolution brought forward by certain writers do not prove anything, even against absolute evolution.

Let us recall in this connection that by absolute evolution we mean the theory which excludes all special interventions on the part of God, even in the origin of life, and in consequence attributes the primary origin of living beings to the natural evolution of inorganic matter, which in certain instances became organised and endowed with life by the mere action of powers inherent in inorganic matter. Let us also remember that this theory is more radical than that of Darwin, for he held that the primary origin of living beings is due to a special intervention on the part of the Creator, who breathed life into one or a small number of primitive forms.

It follows, then, from our first conference, that, far from being opposed to Darwinian evolution, Holy Scripture would not forbid us to go even further in the way of evolution than Darwin himself. But, after all, this result is purely a negative one, and I do not think that the Scriptural argument is capable of giving a *positive* solution to the question we are discussing.

On the other hand, the study of the question in the light of the teaching of the Fathers and of Catholic philosophy is capable of leading to some very positive considerations in favour of the theory of natural evolution. This is what I propose to make clear in the course of the present conference, in which we shall examine the problem of natural evolution in the light of Catholic tradition and of Catholic philosophy. As in the case of the first conference, so here also it is to be understood that we leave aside provisionally the special question of the origin of man.

FIRST PART

Evolution in the Light of Catholic Tradition

The fundamental sources of Catholic tradition are the writings of the Fathers, for which the Church has a special veneration, and also the works of Doctors of later ages. We propose to establish that, while the teaching of the Fathers is very favourable to the theory of ABSOLUTE natural evolution, nevertheless the example of great Doctors of later ages justifies us in accepting a less radical solution, if suggested by the present state of science, provided always that we remain faithful to the spirit which animated the Fathers, and which has never ceased to live in the Church.

FIRST PROPOSITION.

The teaching of the Fathers is very favourable to the theory of absolute natural evolution.

I maintain in the first place that the teaching of the Fathers is very favourable to the theory of absolute natural evolution. In point of fact, I think I am justified in saying that the Fathers who dealt with the matter *ex professo* up to the eighth century are unanimous in holding that there was no special Divine intervention in the formation of the world beyond the creative act by which God called forth the universe from nothing at the beginning of time.

To make quite clear what this affirmation implies, we must point out two things.

In the first place, when we speak of a unanimous opinion of the Fathers on any question, we mean an opinion expressed, not by all the Fathers, but by all those who have discussed the question, and whose teaching has been handed down to us either in their authentic writings or else by witnesses at second hand. Thus it would be absurd to say that we must not speak of the unanimity of the Fathers in favour of the Catholic theory of the Procession of the Holy Ghost, on the ground that not all the Fathers have dealt with the point.

In the second place, there are certain matters—the relations between God's operation and that of secondary causes is one —which are beyond the grasp of the multitude. Such subjects can only be treated *ex professo* in special works. If such a subject be referred to in a sermon, we shall find that either the preacher deals with it only in a superficial way, or else that the language of the pulpit with its imagery will, if taken literally, apparently affirm things which were far from the mind of the preacher. Thus a preacher constantly speaks of God in anthropomorphic terms. *A fortiori* a preacher who is expounding a passage of Holy Scripture, which itself employs imagery, will consider himself justified in using often unreservedly the images which he meets with in the inspired book. In such a case it becomes necessary to examine with care what was the real intention of the speaker, and in the absence of proof to the contrary we must conclude that he did not intend to deal *ex professo* with matters which could not very well be expounded to the multitude. This is, indeed, what St. Gregory of Nyssa pointed out, *à propos* of the question of the evolution of the world, when in defence of the sermons of his brother St. Basil on the Hexameron,[1] he said that people had not properly understood the object of Basil's teaching. Speaking as he was in a large church, before a crowd made up of all sorts and conditions of people, he was obliged to descend to the level of his audience. Doubtless, in the simple language which he employed, calculated to edify the multitude and lead them to contemplate the Creator through His works, Basil gave some insight into the deep notions of philosophy[2] for the sake of the more learned, but still he could not devote himself to a discussion of scientific problems. Thus if, in

[1] Gregory of Nyssa 'Απολογητικὸς πρὸς Πέτρον τὸν ἀδελφὸν αὐτοῦ περὶ τῆς 'Εξαημέρου (Migne, *P.G.*, t. xliv, col. 61-124).

[2] We must bear in mind that the ancients included under the heading "Philosophy" all that now forms the object of Physical and Natural Science. The text of St. Basil's sermons leads us to believe that St. Gregory of Nyssa is here referring to the numerous allusions to natural history found in them.

judging his words, we bear in mind the end he had in view, all the objections which might be urged will collapse of themselves.[1] St. Gregory then protests that in the theory which he was himself about to explain—a theory openly evolutionist, as we shall see—he would teach nothing that did not agree with the doctrine of Basil, although sometimes his account would differ from that of his great brother.[2]

From what we have just pointed out, it will be clear that we must not expect to find a great number of writings of the Fathers dealing *ex professo* with the question under consideration. But while such works are certainly few in number, they come from the pens of the greatest geniuses of the churches of Eastern Africa, Asia Minor, and of the West. Moreover, on the particular matter we are considering, they met with no opposition, at least during the first ages of Christianity[3]—which heightens the authority due to them. For we cannot

[1] *Op. cit., l.c.*, col. 63-65. [2] *Ibid.*, col. 67; *cf.* col. 124.

[3] We think this statement holds good at least to the end of the eighth century. Some authors explicitly profess the theory of absolute natural evolution of living things in the sense of St. Gregory of Nyssa and St. Augustine. Others repeat more or less in their entirety the assertions of St. Basil; lastly, there are some who remain silent on the matter, and limit themselves to expounding the order of appearance of the different creatures, and the meaning of the six days of the Hexameron. But we have not been able to find a single Christian writer previous to the Scholastic period who opposes the theory, or who endeavours to regard the *rationes seminales* of St. Augustine simply as material or passive powers, as later writers endeavoured to do, influenced by the desire to conciliate the traditional teaching with the physical theories of Aristotle. St. John Damascene, in spite of his Aristotelian tendencies, is not an exception, whatever Albert the Great may say (*Summ. Theol.*, p. II, t. xi, q. 60 and 61). For St. John Damascene (Ἔκδοσις ἀκριβὴς τῆς ὀρθοδόξου πίστεως, lib. II, c. 9 and 10. Migne, *P.G.*, t. xciv, col. 905 and 908), affirms that at God's command, the water ἐξήγαγε ζῶα, μικρά τε καὶ μεγάλα, κήτη, δράκοντας, ἰχθύας ἐν τοῖς ὕδασιν ἑρποντας, καὶ πετεινὰ πτερωτά, and the earth ἐξήγαγε παντοῖα γένη ζώων, ἑρπετῶν τε, καὶ θηρίων, καὶ κτηνῶν . . . καὶ τῶν φυτῶν δὲ, καὶ τῶν βοτανῶν, τὰ μὲν κάρπιμα, τὰ δὲ ἐδώδιμα, τὰ δὲ εὐώδη, καὶ ἀνθηρὰ πρὸς τέρψιν

count as opponents the orators like St. John Chrysostom and St. Ambrose, who continued to use in their sermons language like that of St. Basil, for St. Gregory of Nyssa himself praises this language as quite suitable for the pulpit. Does, then, the unopposed opinion of the great Doctors we are going to deal with settle the matter? I do not think so, for then we should have to condemn Darwin's theory as too moderate. But at any rate, their view cannot be passed over. This common view will be found underlying the otherwise divergent opinions of the three great leaders, Origen, Gregory of Nyssa, and Augustine.

We can be brief in dealing with the School of Alexandria, of which Origen[1] is the most illustrious representative. The Fathers of the Alexandrine School regarded the succession of

---

ἡμῖν δεδωρημένα· οἷον τὸ ῥόδον, καὶ τὰ τοιαῦτα· τὰ δὲ πρὸς νοσημάτων ἴασιν. Now the verb ἐξάγω, which essentially expresses an action, ascribes to land and water the exercise of an activity and not a merely passive rôle. The idea of St. John Damascene is, therefore, the same as that of St. Basil. St. John Damascene elsewhere rejects also the opinion of those who hold that the light of the heavenly bodies differs in nature from fire (*op. cit.*, c. 7; Migne, *l.c.*, col. 885-888), and when he affirms that the heavenly bodies are inanimate (*op. cit.*, c. vi.; Migne, *l.c.*, col. 885) the context shows that he is rejecting the Aristotelian theory of the guiding spirits of the stars. If we extend our conclusion only as far as the eighth century, and not to the twelfth, it is because our examination of the authors of these later centuries has not been sufficiently complete to allow of an absolute affirmation in this respect.

[1] Origen was born in 185 or 186, and died in 254 or 255. His *Homilies on the Hexameron* date from 244, or shortly afterwards. He returned to the subject on many occasions, notably in Book IV of the Περὶ ἀρχῶν, and in Book VI of the Κατὰ Κέλσου. Amongst the Alexandrine Fathers who held the doctrine of simultaneous creation we may mention: Clement of Alexandria (born about 150, died between 211 and 216), and St. Athanasius (born towards 296, died in 373). Of the Westerns one may mention St. Hippolytus (died in 239), and Tertullian (born about 160), and amongst the Asiatics Theophilus of Antioch (died in 190).

six days as figurative. This view would, of itself, have led them naturally to the conclusion that the world was always as it is to-day, since they had no reason to suppose otherwise. But they relied in addition on a passage of Ecclesiasticus: Ὁ Ζῶν εἰς τὸν αἰῶνα ἔκτισε τὰ πάντα κοινῇ (Eccli. xviii, 1); a text which they understood in the same sense as that adopted by the Latin versions: "Qui vivit in aeternum creavit omnia simul"—"He who lives for ever created all things at the same time."[1]

When I say that the Fathers of Alexandria concluded that the world has always been as it is to-day, by "always" I mean either "since the mathematical instant of the origin of time," when God drew forth the world from nothingness by an action which equivalently continues in the conservation of things, or else, according to the personal opinion of Origen (an opinion contrary to the common doctrine and since condemned as heretical by the Church), from all eternity. For Origen, while holding the creation of the world from nothing, thought that this creation was eternal.

It is clear that, according to the teaching of the Alexandrine School, there could be no question of a natural evolution of the world, for if everything was made simultaneously there is no room for evolution; but neither is there any room for special Divine interventions in the formation of the world, chronologically distinct from the creative act at the beginning of things.

The question of the manner of the development and formation of the world could only arise when it was realised that there was some reason for supposing that the world has not always been as it is to-day.

In point of time, the question presented itself when a

[1] It is generally admitted nowadays that the Latin versions have inaccurately rendered the meaning of the Greek text (the Hebrew original of Ecclesiasticus is for the most part lost): the term κοινῇ signifying, not simultaneity, but merely the common origin of everything, inasmuch as all things have been equally created by Him who lives for ever.

necessary but excessive reaction against the exaggerated views of the Alexandrine School, which had ended in attributing to a large part of Holy Writ a purely allegorical sense, led St. Ephrem,[1] in the first place, and a little while afterwards, St. Basil,[2] to defend the interpretation of the days of Genesis

[1] St. Ephrem was born after 306 and died in 373. His Commentary on Genesis was written at Edessa (Northern Mesopotamia), to which place he had retired in 363. It is, I think, the first Christian work in which the narrative of the Hexameron is interpreted in the sense of a real succession in time. The works of St. Ephrem, written in Syriac, may have been little known to the Greeks of Asia Minor. But St. Ephrem was in communication with St. Basil, whom he visited at Caesarea in 370. It is, therefore, probable that St. Basil knew of the opinion of St. Ephrem concerning the interpretation of the Hexameron, and it is not impossible that it was his influence which led St. Basil to follow up this new line of thought.

[2] St. Basil was born about 331. He was ordained priest and went to live at Cæsarea in Cappadocia in 364. He became Archbishop of this city in 370, and died on January 1st, 379. Authorities do not agree as to the date of his Homilies on the Hexameron: some think that they were delivered shortly before his death, others ascribe them to a much earlier date. Perhaps it is possible to harmonise the two views by distinguishing between the time when they were delivered and the date of their publication. St. Gregory of Nyssa tells us that St. Basil's sermons on the Hexameron aroused much admiration among his audience, even that of the most learned. On the other hand, we learn from St. Gregory himself that the work met with violent opposition, and he himself was called upon to take up the defence of his brother. It would seem from this that we must distinguish two dates, the first when the audience manifested only admiration of Basil's brilliant eloquence, the second when the reading of the Homilies at leisure gave rise to criticism. This second phase had certainly been reached a year after St. Basil's death. But the first can be put back as far as is called for by the text itself and above all by what it omits. It may be that the Homilies were pronounced before St. Basil was raised to the episcopate, and that they were not published till the end of his life or even after his death by his brother Peter, immediately before the work of Gregory of Nyssa Περὶ κατασκευῆς ἀνθρώπου, intended as a supplement to the Homilies on the Hexameron. In point of fact, it does not seem that St. Gregory was aware of any violent opposition aroused by the work of his brother when he wrote this supplement.

as a real succession. This was in itself an error, as we have seen. But it was a mistake which had happy consequences, for it led to the first known account of the Christian theory of the natural evolution of the visible world.

We said that the homilies of St. Basil on the Hexameron created a sensation.[1] Not, indeed, because they were contrary to the exegesis of the early Fathers concerning the real meaning of the Six Days of Genesis—for in matters not directly connected with the Faith the Saints had the same liberty as ourselves to differ in opinion, as St. Thomas remarks—but rather because they seemed opposed to reason and common sense. Matters came to such a pitch that Peter, Bishop of Sebaste and brother of Basil, and Gregory of Nyssa, became seriously alarmed for the reputation of their elder brother, once their own master, and appealed to Gregory to intervene.

St. Gregory of Nyssa possessed neither the eloquence nor the brilliant imagination, nor above all the high capacity for government and the direction of souls which St. Basil had, but at the same time he was a deeper thinker. In fact, if I am not mistaken, he was the most profound thinker in the Greek Church, at least of those who are canonised saints and Doctors of the Church, and he likewise excelled his brother in his knowledge of the sciences favoured by the Greeks. The ἔξωθεν φιλοσοφία had no secrets for him. He accordingly had no difficulty in perceiving that certain very unscientific explanations of Basil could not be maintained, and he did not hesitate to say so when the occasion presented itself. It is equally certain that the *details* of the cosmogony which he himself expounds are really his own suggestions, for he is careful to point this out, lest people should be tempted to regard them as authoritative teaching, instead of looking upon them as just an academic thesis. It is also to the genius of Gregory that we must doubtless attribute the *depth* and *precision* found in his exposition of principles. But, on the other hand, we have no right to doubt his word when he solemnly assures us that he is going to teach nothing contrary

[1] See above, pp. 54, 55.

to the *doctrine* contained in the cosmogony of Basil. In other words, he is a disciple of the great Basil, educated in the principles of Christianity by this master, and by applying his very powerful mind to the service of these principles, he is going to develop for us, *à propos* of a dubious interpretation[1] of the Hexameron, the Christian theory concerning the action of God in the world.

He commences with some preliminary explanations concerning the relations between the Divine Power and the Divine Will. God's Power is measured only by His Will, and this in turn is regulated by the Divine Wisdom, which knows how each thing ought to be. Gregory also stresses the real identity of the Divine Power, Wisdom, and Will, and the resulting truth that to conceive the order of creation, to will it, and to execute it are for God one and the same. He next proceeds to sum up briefly certain notions belonging to the Physics of the time—that is to say, the Platonist Physics—which he will use in applying his principles.[2] Then he commences his exposition.

In the beginning—that is to say, at the origin of time—therefore in a mathematical instant[3]—God created the heavens and the earth. By this Moses understands the whole sensible universe, for heaven and earth being the two extreme limits of human observation, the expression includes all the intermediary bodies.[4] Hence, in telling us at the beginning of his cosmogony that God created heaven and earth, Moses informs us in brief that God produced [literally: "that God projected, or sent forth," κατεβάλλετο] in an instant the origins (or principles), the causes, the powers of all beings [ὅτι πάντων τῶν ὄντων τὰς ἀφορμὰς (=ἀπὸ ὁρμὰς: "that from whence comes movement," hence "the active beginnings of movement") καὶ τὰς αἰτίας καὶ τὰς δυνάμεις· συλλήβδην ὁ θεὸς ἐν ἀκαρεῖ κατεβάλλετο], and under the primary impulse of His will [καὶ ἐν τῇ πρώτῃ τοῦ θελήματος ὁρμῇ], the essences of

[1] St. Gregory of Nyssa, *op. cit., l.c.*, col. 67.
[2] *Op. cit., l.c.*, col. 68 and 69. [3] *Op. cit., l.c.*, col. 69 and 72.
[4] *Op. cit., l.c.*, col. 72.

all things assembled together [ἡ ἑκάστου τῶν ὄντων οὐσία συνέδραμεν], heaven, ether, stars, fire, air, sea, earth, animals plants [οὐρανὸς, αἰθὴρ, ἀστέρες, πῦρ, ἀὴρ, θάλασσα, γῆ, ζῶον, φυτά]—all beheld by the eye of God and open to the regard of His might, for, as the prophet says, God sees things before they exist [ἃ τῷ μὲν θείῳ ὀφθαλμῷ πάντα καθεωρᾶτο, τῷ τῆς δυνάμεως λύγῳ δεικνύμενα, τῷ, καθώς φησὶν ἡ προφητεία, "εἰδότι πάντα πρὸ τῆς γενέσεως αὐτῶν"[1]].

In other words, as is clear from the beginning of the passage we have just cited, and as the author himself explains later on more clearly,[2] while from the moment of the first creative impulse [ἐν πρώτῃ τοῦ θεοῦ περὶ τὴν κτίσιν ὁρμῇ] all things existed in potentiality or virtually, in a kind of spermatic force sent forth for the originating of all things in the universe [δυνάμει τὰ πάντα ἦν . . . οἱονεὶ σπερματικῆς τινὸς δυνάμεως πρὸς τὴν τοῦ παντὸς γένεσιν καταβληθείσης], still at the time in question no one of these things had as yet a distinct and actual existence [ἐνεργείᾳ δὲ τὰ καθ' ἕκαστον οὔπω ἦν].

The author, then, defines the creative act as a kind of impulse by which God starts off the world upon its evolution, which is to result in the production of all those things which constitute it at the present time—namely, the heaven, ether, stars, fire, air, sea, animals, and plants. All these were contained virtually in the formless and homogeneous mass which was the immediate effect of creation, but none of these things then possessed actual existence.

"From this Power and Wisdom sent forth for the sake of the perfection of each of the parts of the world," continues the

[1] *Op. cit., l.c.*, col. 72.

[2] *L.c.*, col. 77. The following is the complete text of the passage to which we refer: Γέγραπται γὰρ, ὅτι, "Ἡ δὲ γῆ ἦν ἀόρατος καὶ ἀκατασκεύαστος." ὡς ἐκ τούτου δῆλον εἶναι, ὅτι τῇ μὲν δυνάμει τὰ πάντα ἦν ἐν πρώτῃ τοῦ θεοῦ περὶ τὴν κτίσιν ὁρμῇ, οἱονεὶ σπερματικῆς τινὸς δυνάμεως πρὸς τὴν τοῦ παντὸς γένεσιν καταβληθείσης, ἐνεργείᾳ δὲ τὰ καθ' ἕκαστον οὔπω ἦν, "Ἡ γὰρ γῆ, φησιν, ἦν ἀόρατος καὶ ἀκατασκεύαστος."

author,[1] "there followed a certain necessary succession according to a fixed order, so that fire came first and appeared before the other visible things of the universe; and likewise after it that which necessarily followed the first, and after this a third, as artistic nature required. Then appeared the fourth and fifth and the rest of the succession in order, not by a chance encounter resulting from an unordained and fortuitous movement."[2]

Notice the expression "artistic nature": "As artistic nature required" [ὡς ἡ τεχνικὴ συνηνάγκαζε φύσις].

The adjective "artistic" may be attributed to a work of art or to an artist. But here "artistic nature" is put forward as the cause of the development of the world directed towards the state willed by the Divine Wisdom. It is a work of art, indeed, since it is the work of the Divine Wisdom and Power, but it is also in a certain sense itself an artist, since it is endowed with the active impress of the Divine Wisdom and Power, and by reason of this activity it causes the evolution of the world and of all its parts, an evolution which cannot be otherwise than in due order, as willed by the Divine Wisdom, since artistic nature is simply the impulse of this Wisdom, or, using the bold expression of the author, it is the Wisdom and Power of God sent forth for the perfecting of each of the parts of the world [συγκαταβληθεῖσα δυνάμις τε καὶ σοφία πρὸς τὴν τελείωσιν ἑκάστου τῶν μορίων τοῦ κόσμου.].

This impulse was, moreover, unique: the author particu-

[1] *Loc. cit.*, col. 72: Τῇ δὲ συγκαταβληθείσῃ δυνάμει τε καὶ σοφίᾳ πρὸς τὴν τελείωσιν ἑκάστου τῶν μορίων τοῦ κόσμου, εἱρμός τις ἀναγκαῖος κατά τινα τάξιν ἐπηκολούθησεν, ὥστε τὸ πῦρ προλαβεῖν μὲν καὶ προεκφανῆναι τῶν ἄλλων τῶν ἐν τῷ παντὶ θεωρουμένων, καὶ οὕτω μετ' ἐκεῖνο, τὸ ἀναγκαίως, τῷ προλαβόντι ἑπόμενον, καὶ ἐπὶ τούτῳ τρίτον, ὡς ἡ τεχνικὴ συνηνάγκαζε φύσις τέταρτόν τε καὶ πέμπτον, καὶ τὰ λοιπὰ τῆς κατὰ τὸ ἑφεξῆς ἀκολουθίας, οὐκ αὐτομάτῳ τινὶ συντυχίᾳ κατά τινα ἄτακτον καὶ τυχαίαν φορὰν, οὕτως ἀναφαινόμενα.

[2] St. Gregory of Nyssa is here trying to show the mistake of Democritus and Epicurus concerning the purely fortuitous concourse of atoms.

larly stresses this point: it is the μία ῥοπὴ,[1] the one releasing, so to speak, and it does not differ from the creative act. After this creative act, realised at the beginning of time, artistic nature necessarily carries out the Divine plan, by the active power which is within it.

To complete the exposition of the general outlines of the thesis, we must determine in what sense St. Gregory would have us understand what the Hexameron relates concerning the words spoken by God and His perceiving that His works were good.

"Rightly," says Gregory, "does Moses insert certain words of command corresponding to each one of the works. For everything that is made with order and wisdom is a manifest voice of God." Thus Gregory thinks that the words attributed to God by Moses are simply the very works of God, for, realising that in Nature everything is in a state of order, we clearly perceive that everything is in conformity with the Divine Wisdom. That is why David says that the heavens declare the glory of God. And in the same way, when speaking of the miracles which Moses wrought in Egypt, David[2] speaks of the "language of miracles and prodigies wrought by God in the land of Cham."[3] And if after the appearance of each work Moses adds that "God saw that it was good," it is in order to teach us that, while we can certainly appreciate to some extent the works of God, He Himself alone is capable of appreciating their perfection.[4]

That Gregory of Nyssa certainly believed in the evolution of the world by the sole exercise of the active powers with which God endowed it when creating it is the more evident, inasmuch as he takes care to repeat this idea in different terms in the case of each of the works which he treats in detail.

Space will not permit us to follow the author in the extremely ingenious developments by means of which he endeavours to show, in agreement with the Physics of his times, how the various parts of the inorganic world must have

[1] *Loc. cit.*, col. 72, 73: Ἄρτι γὰρ ἀθρόως ἐν τῇ μιᾷ ῥοπῇ τοῦ θείου θελήματος ἀδιακρίτως τοῦ παντὸς ὑποστάντος, . . .

[2] Ps. civ, 27 (Vulg.). [3] *Loc. cit.*, col. 73. [4] *Loc. cit.*, col. 76.

appeared in the order indicated by Moses. Let us confine ourselves to pointing out that, far from assigning the origin of the Hexameron to a succession of visions seen by Moses, as Père von Hummelauer[1] maintains, on the contrary St. Gregory says that Moses, in narrating the appearance of each part of the universe according to a physically necessary succession, " discourses in a wise manner, or ' philosophises ' on physical theories, in the form of a narrative."[2] This is perhaps to entertain erroneous ideas as to Moses' knowledge of Physics, but as Moses had been educated in the Egyptian court, it was natural to think that he had learnt all the secrets of the sciences from those whom the Greeks themselves acknowledged as their masters.[3]

As to the appearance of organic beings, Gregory does not speak of this in detail. After expounding his physical theory concerning the evolution of the inorganic world, he concludes[4] by saying that in the case of the other works of the Six Days, he thinks it unnecessary to add anything to what Basil has said, with the exception of the formation of man, which he made the subject of a special treatise, already sent to Peter, in order to complete the work which Basil had left unfinished.[5] As a matter of fact, there was no cause for Gregory to deal specially with the origin of organic beings in the treatise which we have been examining, since the objections of Basil's opponents were not concerned with the origin of living beings. It is, then, all the more remarkable that Gregory should have

[1] Franciscus de Hummelauer, S.J., *Commentarius in Genesim*, Paris, Lethielleux, 1895, pp. 51 and 74.

[2] *Loc. cit.*, col. 72: Ἀλλ' ὡς ἡ ἀναγκαία τῆς φύσεως τάξις ἐπιζητεῖ τὸ ἐν τοῖς γινομένοις ἀκόλουθον, οὕτως ἕκαστα γεγενῆσθαί φησίν ἐν διηγήσεως εἴδει περὶ τῶν φυσικῶν δογμάτων φιλοσοφήσας. This passage immediately succeeds that given in the note on p. 75.

[3] See on this point St. Basil, Ὁμιλίαι εἰς τὴν Ἑξαήμερον (Migne, *P.G.*, t. xxix, col. 5).

[4] Gregory of Nyssa, *op. cit.*, *l.c.*, col. 124.

[5] Gregory of Nyssa, Περὶ κατασκευῆς ἀνθρώπου (Migne, *P.G.*, t. xliv, col. 125-256).

felt himself called upon to enumerate formally the animals and plants among the things which were contained virtually in primitive nature at the moment of its creation, and which later on manifested themselves by the necessary evolution of artistic nature. And it is, indeed, true that once it was understood that St. Basil's remarks concerning the origin of organic beings was to be interpreted in the light of the general principles laid down by St. Gregory of Nyssa, there certainly was nothing more to add.[1]

St. Basil affirms in many places and with insistence that it is indeed the earth and the water which produced the first plants and animals, including their life-principles or souls. This they did by a generative activity received from God and retained to the present time (*l.c.* col. 94 *seq.*, 148 *seq.*, 189 *seq.*), for it is well known that nowadays also the earth generates animals, in particular numerous flying creatures, mice, frogs, and eels (col. 189-192). And " what we observe to-day is a manifestation of what has happened previously." It is, therefore, to natural phenomena akin to what we call " spontaneous generation," due, as St. Basil insists, solely to the activity of inorganic terrestrial matter, that the origin of the first living beings, whether plants or animals, is to be attributed.

The only apparent difference between St. Basil and St. Gregory of Nyssa in this connection has to do with the moment

[1] It could doubtless be objected that the rapidity of the appearance of vegetation as described by St. Basil is impossible on the hypothesis of natural evolution, and the same applies to the appearance of animals aquatic, aerial, and terrestrial. We do not deny this impossibility, which St. Augustine later on invoked as a " conclusive " argument against the literal interpretation of the six days. But while it is true that this impossibility may be demonstrated, there is still no contradiction in terms between the two theories. That explains why St. Gregory of Nyssa accepts the literal interpretation, as well as the rapid development of the first plants (Περὶ κατασκευῆς ἀνθρώπου, Migne, *P.G.*, t. xliv, col. 132), and at the same time affirms in explicit terms his belief in the absolute natural evolution of the world, including animals and plants.

when matter was endowed with the power of generating living beings. St. Gregory holds that matter was thus endowed in and by the creative act, while St. Basil seems to say that the earth and water only acquired successively the power of generating plants, and aquatic, aerial and terrestrial animals in virtue of the words which God spoke on the third, fifth, and sixth days. This would seem to suggest that there were certain special interventions on the part of God, not, indeed, in order directly to produce living organisms, but to give to inorganic matter new active powers which would enable it to generate these living things. But the solemn assertions of St. Gregory of Nyssa would lead one to conclude that if St. Basil does express himself in this way, it must be attributed to the oratorical form of his Homilies, so that in teaching the theory of the μία ῥοπη St. Gregory was not putting himself in opposition to the real doctrine of his great and revered master.

The theory, then, of St. Gregory is, indeed, a theory of absolute evolution, in the case of living things as well as the inorganic world. It formally denies any special intervention on the part of God other than the unique impulse, the μία ῥοπὴ, of the original creation at the beginning of time, which produced as its immediate result a formless and homogeneous whole. There is, therefore, no room for a special intervention of God, even at the origin of life. All things, whether inorganic or organic, are the result of a natural evolution, in the strictest sense of the word.

This magnificent conception, attributing the evolution of the world to the concourse of secondary causes acting in accordance with the tendency which they had received from God for this end, brings out the wisdom and power of God in His work much better than the simple theory of a world coming from the hands of the Creator in a quite finished state, as held by the School of Alexandria. It is, therefore, not surprising that St. Gregory of Nyssa won the day. Indeed, from that time, we hear no more of the violent opposition raised in the Greek Church to the literal interpretation of the

Six Days of Genesis. It is surely significant that if this interpretation from this time forward is admitted in the Church, it is in the guise of the theory of natural evolution which seemed identical with it, and it is accepted in spite of the mistakes in Gregory's exegesis—mistakes which are quite hidden by the brilliance of his theory.

For, strictly speaking, the work of St. Gregory of Nyssa is not an exegetical work. It was not the text of Genesis which suggested his theory. But Christian feeling and tradition made him realise that if the world was indeed formed successively, it must have been by a natural evolution. As to the details, which we have been obliged to pass over, they are nothing more than an attempt to adapt this evolutionary theory to the order of succession of the works of the Six Days. I repeat that while Gregory's theory of natural evolution is derived from the common tradition of the Fathers concerning God's activity in the world, the part of his work which he likens to a mere academic thesis is not exegesis; it is simply Concordism.

On the other hand, it is as an exegete that St. Augustine[1]

[1] St. Augustine was born on November 13th, 354, at Tagaste in Numidia, of a pagan father and a Christian mother (St. Monica). He received a brilliant education, and taught *belles lettres*, first of all in his native town, later on at Carthage, and finally at Milan. Although he had been religiously brought up by his mother and intended for baptism, he allowed himself to be led into vice, and afterwards into heresy, becoming an ardent disciple of the Manichaean sect. The study of astronomy, and the immoral lives of the elect members of the sect, led him to doubt the Manichaean doctrines, and the falsity of these was definitely brought home to him as a result of an interview which he had with the Manichaean Bishop Faustus, who was regarded as an oracle of the sect. But it was not till some time later that the sermons of St. Ambrose, Bishop of Milan, and the subsequent reading of certain books, convinced him of the truth of Christianity. His carnal relationships retarded his conversion up till August, 386. He was baptised on April 25th, 387, by St. Ambrose. His mother died a few months later. He then spent a year in Rome, and returning to Africa in the course of the autumn of 388, retired to a place near Tagaste, where,

approached the study of the question and continued it during almost forty years. This patient study of the sacred text revealed to him more and more clearly the impossibility of accepting the historical character of the succession narrated in the work of the Six Days, and led him to take up in the question of natural evolution a position between that of the Alexandrine Fathers and that of St. Gregory of Nyssa. Like

---

together with some friends, he founded a religious community devoted to meditation and study. It was at Tagaste that he wrote his first work on Genesis, under the title of *De Genesi contra Manichaeos, libri duo.* In 391 he was ordained priest by Valerius, Bishop of Hippo, who chose him as his coadjutor in 394, and to whom he succeeded the year after the siege of Hippo. Towards 393 he was engaged on a commentary on the first three chapters of Genesis, seeking to keep strictly to the literal sense, but he left this work unfinished, feeling, as he tells us later on, that it was too heavy for a commencement. Towards 400 he returned to the subject in the three last books of his *Confessions.* Then the following year he resolved to write a new complete commentary on the first three chapters of Genesis. He took fifteen years over it, and then published it under the title of *De Genesi ad litteram, libri duodecim.* Beginning in 417 he once again attacked the question in Books XI, XII, and XIII of *De Civitate Dei.* Finally, towards the end of his life, while he was engaged in revising his works, he came across the manuscript of his unfinished commentary which he had intended to destroy, and upon reading it through again, he decided that its publication might be of some use, although he regarded it as very much inferior to the work in twelve books which he had published on the same subject (cf. *Retractionum,* Liber I, cap. xviii). He accordingly published this unfinished work just as it was, under the title of *De Genesi ad litteram, imperfectus liber.* We may, therefore, say that from the time of his baptism (387) until his death (430) St. Augustine was, while in the midst of his numerous labours, constantly preoccupied with the question of the interpretation of the first chapters of Genesis. From 393 onwards, at least, he endeavoured to interpret them as literally as possible, but the impossibility of regarding the succession of the Six Days as anything other than purely figurative seemed to him to be always perfectly evident. As for his teaching concerning the natural evolution of the world, he expounds this principally in his great treatise in twelve books, *De Genesi ad litteram.*

the Alexandrians, Augustine holds that from the first moment of creation, the inorganic world was substantially the same as it is to-day, but he affirms with emphasis that living beings were only virtually created at the beginning, and that they subsequently appeared by an absolute natural evolution, understood in the same sense as St. Gregory of Nyssa. But St. Augustine develops his ideas on this subject at much greater length than St. Gregory.

The question appears for the first time in Chapter xxxiii of Book IV of *De Genesi ad litteram*. St. Augustine does no more here than enunciate the question, and he does so in a perfectly general form, which comprises the completion of the inorganic world as well as living beings. "Did the works enumerated in the Hexameron appear in an instant, or were they rather produced successively? Or again, if we see something realise in the course of time what is called for by its nature, does this result from these innate 'reasons' which God sent forth as in germ in the very act of creating?" [*ex illis insitis rationibus, quas, tanquam seminaliter sparsit Deus in ictu condendi, cum dixit et facta sunt*]. As is evident, this is almost word for word the expression of St. Gregory of Nyssa: ὅτι τῇ μὲν δυνάμει τὰ πάντα ἦν ἐν πρώτῃ τοῦ θεοῦ περὶ τὴν κτίσιν ὁρμῇ οἱονεὶ σπερματικῆς τινὸς δυνάμεως . . . καταβληθείσης [*in ictu condendi rationibus quas tanquam seminaliter sparsit*].

It is quite clear that what St. Augustine here calls *insitae rationes quas tanquam seminaliter sparsit Deus in ictu condendi*, and which he later on calls *seminales rationes*, are none other than the σπερματικαὶ δυνάμεις of St. Gregory.

While Gregory, however, defends the σπερματικαὶ δυνάμεις, Augustine here does no more than ask the question. But the subject of Augustine's question is the same as the subject referred to in Gregory's statement.

In order to make clear the meaning of his question, and doubtless, also, to suggest his own opinion, Augustine then passes from this general statement to some particular in-

stances. He speaks first of time: the time which has rolled by in the course of the ages was created in an indivisible instant. This conception is a very profound one: time, being simply a condition of movement, was created *in seminali ratione* in the creation of the moving thing, that is to say, the material thing, and this creation was necessarily realised in an instant. By a natural transition, he then passes on to speak of living beings. "If," says he, "we think that when things were made by the word of God (as narrated in Genesis) the transformations of things and of days took up intervals of time such as we are accustomed to, then we shall have to conclude that not one day but many were necessary in order that the plants which cover the earth should germinate and grow, as the Scripture narrates.[1] The same applies to the development of birds previous to the time when they can fly. Could it be that the ova only were created on the Fifth Day? But if this would justify the statement that the birds were then created, inasmuch as there was in the ovum all that was necessary for its development into a bird at the end of the normal number of days (for in the ovum there were already many principles or 'reasons' immaterially united to the material things) (*quia inerant jam ipsae numerosae rationes incorporaliter corporeis rebus intextae*)—then why could not the same be said even before the ova existed, seeing that the humid element already contained the same principles (*rationes*) capable of giving rise and carrying out the development of birds in intervals of time suitable for each species?" In this passage St. Augustine clearly denies that the subjects containing the *rationes causales* were, according to his hypothesis, created ova or seeds. It was rather inorganic matter, and in the particular case of the birds, the "humid element"—*i.e.* water. Evidently, also, the powers referred to are active ones, since they are identified with the powers of development situated in an ovum.

In Book V St. Augustine deals with the question which, as

[1] We abbreviate slightly.

we have seen, he asks himself in Book IV, and declares that at the very beginning of time the inorganic world was made substantially as it is now, and that it then commenced its developments, of which the entire series existed already in its cause at the initial moment. As for the species of plants and animals, these were at that time made only in their causes, from which they subsequently came forth when their proper time had come. Thus the earth produced the plants and trees causally when, at the moment of creation, it received the power of bringing them forth; the waters produced in the same causal way the fishes and birds, and the earth produced in a causal manner the terrestrial animals inasmuch as at the moment of creation the water and earth received the power of producing them; but neither vegetables nor animals existed in reality until in the course of time the earth and water brought forth these organisms. And, adds St. Augustine, no species was produced subsequently which was not causally contained in matter at the first instant of the creation of the world.

At the end of Book V,[1] St. Augustine, to make his mind still clearer, remarks that a tree is contained completely in its seed, not, indeed, according to its material mass, for that comes from the nutriment derived from the soil, but according to its force and causal power (*vi potentiaque causali*). "In that little seed there is a more wonderful and more powerful force, which is capable of transforming the adjacent moisture mixed with earth into the nature of the tree, with its spreading branches, its green foliage, and its figure, its wealth and forms of fruit, and the organisation proper to each of its parts. For what is there that grows upon the tree or hangs from it that has not been derived from the mysterious storehouse of its seed? . . . But, just as in the seed there were in an invisible manner all those things which were to arise in the course of time, so also we must conclude that the world, at the time when God created all things simultaneously, contained

[1] Cap. xxiii.

simultaneously all those things which were made in it and with it when the day was made: not only the heavens with the sun, moon, and stars, whose natures persist throughout their movements of rotation, together with the earth and the seas, which are subject to irregular movements, . . . but also those things which the water and earth produced in power and causally before they could develop in the course of time, as we now know them.

Surely St. Augustine could hardly have explained more clearly what he means by *rationes*, forces, or seminal causes. Things which were not in actual existence at the time of Creation were there in their cause, just as we can say that the tree exists in the force or causal power in its seed; and he clearly distinguishes between this causal existence in the seed and the matter of the tree found in the soil which is the source of its nutrition. There is no question, then, of the passive or material power in the moisture of the soil of being changed into the matter of the tree under the influence of an adequate active force. What he has in mind are active powers, analogous to those which are present in the seed. But at the moment of creation these powers of producing organisms did not find their home in seeds. For, in the case of the vegetables as well as the animals, St. Augustine confesses that he does not know whether the seed or the organism first existed—he only knows that seeds and organisms were produced by the earth, in which they already existed causally.

I have thought it all the more necessary to insist on the true meaning of St. Augustine's theory, because in Book VI the great Doctor affirms that at the beginning of time the body of man was contained in terrestrial matter exactly in the same way as the other living beings. What we have just said will, therefore, be important to remember when we deal with the origin of man later on.

I ought to go on to explain now how St. Augustine endeavours to base his theory on passages of Holy Scripture. But space is lacking for that.[1] In point of fact, there is a general

[1] See Appendix III.

agreement nowadays that the exegetical proofs of St. Augustine, based as they are in part upon two texts inaccurately translated, are not demonstrative. Nevertheless, the theory of absolute natural evolution can still claim the great authority of Augustine, as a witness of the Christian mind of the first centuries. For the slightest acquaintance with the writings of St. Augustine makes it clear that, even if he had not thought that he could prove his theory from Holy Scripture, he would still have repudiated any special Divine intervention in the natural order beyond the original primitive creation. Does he not, for instance, boldly proclaim that God manifests His greatness very much better by the natural activity of secondary causes than by His miracles? The emphatic way in which he excludes this latter kind of intervention shows how deeply attached he was to his theory. Moreover, he manifests his opinion in so many passages of *De Genesi ad litteram* that it is possible to say, without misrepresenting him, that in spite of his desire to keep to pure exegesis, the Christian philosopher did, in point of fact, exert a certain influence upon the exegete, and it is to the first as much as to the second that we must ascribe the resulting theory of evolution. It is even highly probable that if inaccurately translated texts had not stopped him, we should have been able to place St. Augustine side by side with St. Gregory of Nyssa as one of the upholders of the evolutionary origin of the inorganic world as well as the organic world. Such a theory, if separated from the literal interpretation of the Six Days, would have allowed sufficient time for the regular evolution of the inorganic as well as for the organic world.

In any case, we are justified in maintaining that, according to the common view of those early Fathers who dealt with the question *ex professo*, every natural perfection of the world which did not exist actually at the moment of the primitive creation existed then virtually, and subsequently appeared by a natural evolution without any special Divine intervention.

When applied to the certain data of geology, this doctrine necessarily involves the following consequences:

(1) The succession of fauna and flora revealed by geology is the result of a purely natural evolution.

(2) The first beginning of life on the earth is itself due to a natural evolution of ordinary matter—unless, indeed, it is admitted that the first organisms existed right from the mathematical moment when God drew forth matter from nothing. As this last opinion is quite improbable, the authority of the Fathers would lead us to accept the theory of absolute natural evolution—a theory which was formally professed, as we have shown, by St. Gregory of Nyssa and St. Augustine.[1]

Second Proposition.

Aristotelian scholastics generally limited the theory of absolute natural evolution to a section of living beings, for scientific reasons, but still all the Doctors remained faithful to the spirit of Christian Naturalism. Provided we remain faithful to this spirit, we are therefore free to accept, at least provisionally, a less radical solution than that of absolute natural evolution if the present state of science makes this advisable.

[1] Some may perhaps be surprised that we are not more definite concerning the evolution of the material world. The reason is, that, while we believe the theory of the primitive fluid state of the earth, and that of the primitive nebula, to be true, neither can be directly proved by geological facts. For we now know that what were once described as the primitive granite and gneiss are neither the first product of the solidification of the globe nor crystalline deposits formed in the depths of overheated waters, but simply represent either volcanic rocks or metamorphosed deposits, which sometimes do not date back to an epoch previous to the coal strata. Of course, there are very cogent reasons for accepting these theories. However, we cannot go into details here, and we must content ourselves with saying that in our opinion the arguments upon which the great theories of modern cosmogony are based are of the same character as those which lead us to admit that all living things have descended by natural evolution from very elementary organisms. As a matter of fact, they would seem to possess a degree of certitude very much inferior to that of transformist theories understood in a limited sense, as, for example, the proposition that all aërial vertebrates have a common origin.

Are we obliged to follow the opinion of the Fathers? It is well to recall in this connection the advice given us by Leo XIII concerning the prudent use of the Patristic argument. We must, accordingly, first of all, examine the attitude of the later Doctors on the matter.

It cannot be gainsaid that the Scholastic Doctors did, in point of fact, abandon the doctrine of absolute natural evolution and maintained instead what we have described as special Divine interventions in the origin of certain living beings. I will add that an attentive study of the question has led me to the conclusion that they did so for motives of a scientific character.[1] Hence, I infer that if the present state of science counsels us not to go so far as the early Fathers did in the idea of natural evolution, we are justified in acting accordingly, provided always we retain the spirit which led the Fathers to adopt this theory, and which was retained by the great Doctors of later ages.

It is a matter of general knowledge that, during the first ages of Christianity, the philosophy of Plato occupied the place of honour, and the Fathers christianised this philosophy just as later on the Doctors of the Middle Ages christianised the philosophy of Aristotle.

Plato was versed in astronomy, and was also a great geometrician, for it was he who first developed the theory of conic sections. But I am not aware that he made a special study of Natural History. It was quite otherwise with Aristotle, who gathered together all that the Greeks knew or thought they knew concerning living beings. Moreover, the philosophy of Aristotle is more concrete in character—more mundane, so to speak, than that of Plato. We must add that Aristotle introduced a tremendous mistake into Physics—namely, his theory concerning the peculiar nature of the heavenly bodies,[2] and their influence on the terrestrial or sublunar bodies.

[1] See Appendix IV.

[2] Plato thought that the matter of the stars consisted of fire. He also held that the stars are moved by intelligences which he regarded as their souls. Those Fathers who were Platonists accepted the first hypothesis, while generally rejecting the second.

The reason why the Fathers of the first centuries found no great difficulty in allowing that inorganic matter was organised by its own forces so as to give rise either directly or indirectly to all living beings, is probably that spontaneous generation was then regarded as an undoubted fact of experience. We have seen (p. 78) that St. Basil directly appeals to the facts of spontaneous generation, and St. Augustine in his turn does not seem to see any difficulty, scientific or philosophic, in his interpretation of the sacred narrative in so far as it deals with the origin of plants, animals, and even of the human body. His surprise only begins when he comes to the narrative of the origin of the first woman. "For," says he, "we know by experience that animals can originate from water, or from earth, or branches, or fruit, or even from the flesh of animals, which brings forth innumerable kinds of worms and reptiles, or, lastly, by the union of parents. But we know no case in which an animal is born from the flesh of an animal of the same species and differing only in sex. If we seek in nature a fact similar to the production of the woman from the side of the man, it is impossible to find it."[1]

This passage brings home to us that if St. Augustine found no difficulty in the origin of living beings by natural evolution from inorganic matter, it was because similar facts were plentiful. Of course, St. Augustine was not unaware that experience does not establish that all the species of animals can thus originate in earth or water or from the tissues of plants or animals belonging to other species. But since many animals were known to originate in this way, it would have been unreasonable to deny that the same might have held good for the others if favourable conditions had been present. We reason in the same way to-day. Who would be so bold as to maintain that it is absolutely impossible for an ovum of any given species to develop without fecundation, seeing that we have been successful in developing unfecundated ova of sea-urchins and other animals? Now conditions favourable to the

[1] *De Genesi ad litteram*, l. IX, cap. xvi. (No. 29).

spontaneous generation of certain animals may have been present in the first ages of the world which are no longer realised to-day. As for the cause, the Platonists did not look upon the stars as having a nature transcending that of terrestrial bodies, and the early Fathers combated vigorously, and sometimes excessively,[1] the idea of a special activity attributed to the heavenly bodies by certain philosophers. It was therefore natural that St. Augustine should consider the bodies which give rise to organisms by spontaneous generation as the real and true causes of these, and that in consequence he should hold that the primitive seminal principles which were the active causes of the natural evolution of all organisms, had as their subject the solid or liquid inorganic matter from which all living species were to originate, either directly or indirectly.

But the Aristotelians were obliged to be more exacting.

Aristotle, in seeking to discover the causes of the phenomena observed in the world, found that there were many which could not be explained simply by the properties of the four elements. He thus considered it necessary to have recourse to extra-terrestrial causes in order to explain these phenomena.

By very plausible reasoning he endeavoured to establish that the heavenly bodies are not composed of the four elements, but are superior in nature to terrestrial bodies, and that in consequence of this superiority they have a powerful influence upon the latter. He was in this way led on to the notion that the heavenly bodies exercise a general influence on all the phenomena of terrestrial or sublunar nature, an influence which, while subordinated to the action of the First Cause or Prime Immovable Motor, is nevertheless comparable

[1] See St. Basil, *l.c.*, col. 96 et 120, *seq.* ; St. John Chrysostom, Ὁμιλίαι εἰς τὴν Γένεσιν (Migne, *P.G.*, t. liii, col. 52, 58, and 59); St. Ambrose, *Hexameron*, I, III, cap. vi. (Migne, *P.L.*, t. xiv, col. 166, 167); I, IV, cap. i and ii (*ibid.*, col. 187-190). It is easy to understand the violent opposition of these writers if one remembers the close relations between these theories and the pagan doctrines: the spirits which animated the heavenly bodies or which guided them, and which were the principal source of their activity, were, in fact, regarded as gods.

to that of the First Cause by reason of its universality. This influence manifests itself notably in the generation of animals: the sperm would be inefficacious if it were not for the influence of the stars, and in particular of the sun. This was summed up in the saying, universally accepted in the Middle Ages: *homo generat hominem et sol.*

But if particular causes should be lacking, we should have to allow that the universal causes alone were in action. Now this is the case when an organism originates in inanimate matter without the concourse of seed. For, as St. Thomas[1] points out, if an inanimate body were to transform itself into a living being, it would have to be capable of acting upon itself. But even in living things, or organisms, no one part is capable of acting on itself, but different organs act upon each other, and in this way the living being can be said to act really upon itself. This explains how a living being can develop by the action of seminal powers contained within it, which would be impossible for an inorganic body. Hence, if an inorganic substance is transformed into an organic body without the concourse of sperm, it can only be by the influence of the heavenly bodies. It is then in the stars that the seminal power is to be sought, and not in the inorganic terrestrial matter, which co-operates in its evolution simply by its disposition which renders it capable of receiving the influence of the heavens in a particular way. Aristotle and his followers had elsewhere extended the same conclusion to plants[2] and to animals which originate by spontaneous generation from plant or animal organs, in a state of putrefaction or otherwise. The matter from which they develop constituted in their view

[1] *In II Sent.*, Dist. xviii, q. *i*, a. 2.

[2] St. Thomas likewise attributes to the action of the heavenly bodies the production of plants as described on the third day of the Hexameron (*In II Sent.*, Dist. xiv, q. i, a. 5, ad 6 m.). In this he departs from the teaching of the Fathers, which, as we have seen, attributes it exclusively to the earth. Still, like the Fathers, he attributes it to secondary causes, for the reason that the scientific theories of Aristotle did not oblige him to have recourse to a special Divine intervention.

the female or purely passive element: the male or active element could not be found upon the earth, and therefore had to be sought in the heavens. And so Aristotle says that, just as the earth is rightly said to be the mother of living things, so also heaven is their father.

But in addition to this more or less theoretical conclusion, Aristotle thought he had been able to establish by induction a very important natural law. In Book III of his treatise on the "Generation of Animals" and, above all, in Books V and VI of his "History of the Animals," Aristotle discusses at great length the known cases of spontaneous generation, and the examination of all these facts leads him to conclude that the species which originate by spontaneous generation are incapable of reproducing themselves. It is true that certain testaceans, such as purpuræ and whelks, unite together as if to reproduce, and then bring forth a kind of "comb," but from this comb nothing arises, and testaceans of these kinds, like the rest, only originate from slime or decaying matter.[1] It is also true that certain insects which originate in decaying matter unite and lay eggs, but these eggs only give birth to worms, which never in the course of their life become transformed into perfect insects.[2] The law was thus thought to be a general one. And it is simply this experimental law, and not an *a priori* principle, that St. Thomas[3] invokes when in Question xci of the First Part of the *Summa Theologica* he says (a. 2, ad 2 m): "Perfect animals, which are generated by sperm, cannot be brought into existence by the power of the heavenly

[1] Περὶ τὰ ζῷα ἱστοριῶν, Βίβλ· Ε, τε (*De Animalibus historiae*, l. v, cap. xv, alias xiii).

[2] *Ibid.*, Βιβλ· Ε, λα, (l. v, cap. xxxi, alias xxv).

[3] St. Thomas Aquinas and his master Albert the Great are, as far as we know, the first Christian writers to depart from the traditional doctrine and to maintain that the first individuals of the higher species of the animal kingdom were directly produced by God, while the plants and the inferior animals owed their origin to the action of the heavenly bodies. Other contemporary writers like Alexander of Hales and St. Bonaventure remained faithful to the ancient doctrine of absolute evolution (see Appendix IV).

bodies, as Avicenna maintains." But in Question lxxi St. Thomas seems to suggest something more: "Nature proceeds to its effects by determined means, and this is why species which are naturally generated by sperm cannot naturally be generated without sperm." "Nature proceeds to its effects by determined means": this cannot imply that the same effect may never be obtained by different means, for everybody knows that the contrary is true. It simply means that the relations between the natural causes and their effects are determined by natural laws, and these natural laws are unchangeable. Accordingly, the natural law which St. Thomas enunciates, a law based upon observation as we have seen, holds good for the commencement of the world as well as to-day. St. Thomas is here simply applying the Principle of Present Causes just as Darwin did when he maintained that it is in actual phenomena that we must seek the explanation of the origin of species in early times, having previously established elsewhere the fact of the origin of species by way of evolution.[1] The basis of this Method of Actual Phenomena was for the English naturalist as for the Angel of the Schools, the immutability of the laws of nature, and particularly of biological laws. And it was also, I think, the same principle which led Darwin to postulate a special Divine intervention in the origin of life, although he is not very explicit on the matter. I think, then, that this postulate, although opposed to the teaching of the Fathers who dealt with the question *ex professo*, is legitimate from the doctrinal point of view. And in the same way we ought to regard as legitimate any other modification in the doctrine of absolute natural evolution if it is based on solid scientific reasons.

But while it is legitimate to act in this way, it is always on condition that we conserve the spirit which prompted the conclusions of St. Augustine and Gregory of Nyssa, just as the Scholastic Doctors did in their day. This spirit of Christian naturalism has always been held in honour in the Church,

[1] See above, p. 78, for the same principle already laid down by St. Basil.

and it is only in periods of decadence that its prestige has lessened to some extent. By Christian naturalism I mean the tendency to attribute to the natural action of secondary causes all that is not excluded therefrom either by reason or the positive data of the natural sciences, and to have recourse to a special Divine intervention distinct from God's general governing activity only if it is absolutely necessary to do so. I would not say that one who repudiates Christian naturalism should be regarded as a heretic, for I do not think that there is question of a revealed truth. But he would certainly be out of harmony with the traditional spirit of Christianity, and if he realises that he is thus putting himself in opposition to the constant teaching of Fathers and Doctors (and this in a matter which certainly has reference to religion, since Christian tradition professes that it is by the activity of secondary causes that God manifests His wisdom, goodness, and power),[1] then we cannot absolve him from the accusation of pride and temerity. While, then, we are at liberty to accept in the question of evolution any modification which would seem to be suggested by the actual state of science, it must, nevertheless, be with a mind disposed willingly to accept those conclusions most in favour of natural evolution that we endeavour to find the solution dictated in point of fact by the sciences of observation.

[1] See especially on this point St. Thomas Aquinas, *Summa contra Gentiles*, l. III, cap. lxix and lxxvii; *In II Sent.*, Dist. i, q. i, a. 4; *Summa Theologica*, I p., q. ciii, a. 6, and q. cv, a. 5; q. xxii, a. 3 et alibi.

SECOND PART

The Darwinian Theory of Evolution and Catholic Philosophy

I spoke above of the "sciences of observation." By that expression I mean the sciences in the widest sense of the word —that is to say, including their philosophic foundation. For it cannot be too often repeated, especially in our days, that every branch of science derives its rational basis from metaphysics. It does not follow that a scholar who is not a professional metaphysician is not capable of much good and useful work. A man of common-sense is naturally a metaphysician, for true metaphysics is simply the science of sound common-sense. Still, a scholar who knows nothing of scientific metaphysics is liable to get on the rocks.

In the first place, professional specialisation, together with the professional pride which naturally follows upon it, may lead him to repudiate the laws of common-sense. This has, in fact, happened in the case of many modern mathematicians, who, failing to realise the fundamental independence of the *genera* "figure" and "quantity," as also the essential distinction between continuous quantity and discontinuous quantity or number, and imagining, in addition, that the notion of number can be arrived at independently of observation, and that this notion alone can give us exact certitude, have arrived at conclusions the absurdity of which will astonish a future and more enlightened generation. The same thing has happened also to many unbelieving naturalists, and especially to those who profess an atheistic and materialistic theory of evolution.

In the second place, the non-metaphysical scholar will not have analysed scientifically the foundations of his convictions, and will in consequence never be able to justify them completely, nor to estimate the exact degree of certitude which they possess. He will thus be liable to pass from an undue or even excessive trust in the value of theories, like that

manifested in the nineteenth century, to a state of scientific scepticism like that presented by some otherwise eminent scholars to-day, and which is perhaps the greatest danger of all at the present time from the religious point of view.

Finally, he will not always be able to reply to the plausible arguments which sophists will be able to bring forward against the most legitimate of his conclusions, even though he may realise personally that these objections are not convincing.

In this book we are not concerned with the materialistic theory of evolution, but in examining the Darwinian theory in the light of Christian philosophy—which alone deserves the name of philosophy[1]—we shall endeavour first of all to analyse the metaphysical conceptions upon which the conviction of the evolutionist ultimately rests, and thus this conviction will be transformed into a reasoned certitude or probability as the case may be. We shall then proceed to examine and weigh the philosophical argument by which some have endeavoured,

[1] By " Christian philosophy " we mean the body of doctrines which the Fathers and Christian Doctors have built up by making use of both the writings of the philosophers of pagan antiquity and the data of revelation. Accordingly, we do not deny the term " philosophy " to the teaching of the philosophers of antiquity, especially Plato and Aristotle, since this teaching, purged of its principal errors, provided the basis for the development of Christian philosophy. This latter is, moreover, capable of further perfecting. The Fathers and Doctors eliminated from the teaching of the pagan philosophers those errors which had a doctrinal significance, but they were not able to do the same in the case of errors of a scientific character. And, without going beyond the purely philosophical domain, there is no reason to think that all progress has become impossible since the thirteenth or sixteenth centuries. But to perfect a doctrine is not to upset it. That is why we do not regard as worthy of the name of " philosophy " the systems of those who, in the words of Leo XIII, " patrimonio antiquae sapientiae post-habito nova moliri quam vetera novis augere et perficere maluerunt, certe minus sapienti consilio et non sine scientiarum detrimento " (Encycl. *Aeterni Patris*, 4th August, 1897, Desclée's edition of the *Acta Leonis PP. XIII*, vol. i, pp. 103-4). It is incidentally not necessary to be a Catholic in order to share our opinion on this subject. See Gonzague Truc, *Le retour à la scolastique*, Paris, 1919.

either to demonstrate the impossibility of the origin of organisms by way of natural evolution, or else to restrict its extension. As a result we shall see that the Catholic theory concerning the activity of secondary causes destroys the objection, at least in the case of the limited form of the theory as Darwin held it.

Third Proposition.

The application of the certain principles of Catholic philosophy and theology to the data of the sciences of observation transforms into an absolute and reasoned certitude the conviction of the simple naturalist in favour of a very advanced system of transformism. It also obliges us to accept, at least as extremely probable, the theory which derives all living beings from one or a few very elementary organisms, as Darwin held.

The observed facts which lead scientists to believe in the natural evolution of organisms belong to the domain of different sciences. But I think I may say that the most convincing are those which are derived from the study of stratigraphic palæontology and geographical biology. The palæontological argument alone points to an evolution which goes a long way back, even if we consider the common origin merely of the three higher classes of vertebræ. The proofs from palæontology and geographical biology become in general the more conclusive as the groups they deal with are more closely allied in a zoological or botanical classification. In fact, it may be difficult to distinguish between conclusions which are highly probable and those which are absolutely certain. But up to the present, the palæontological and geographical arguments have not been able of themselves to establish anything concerning the origin, common or otherwise, of organisms belonging to different sub-kingdoms. That is why in my third proposition I limit myself to affirming the certitude of a very advanced system of transformism, without going into further detail.

With these reservations, I consider that the philosophical basis for the certain deductions which can be derived from the

facts of science, and in particular those of palæontology and geography, in favour of the theory of evolution, can ultimately be reduced to the following three principles:

I. The first is the fundamental principle of scientific induction, which Aristotle develops *à propos* of what is called the physical proof of the existence of God. To it we may add considerations based upon God's veracity, in order to forestall objections which might be put forward by certain pious but unenlightened folk.

The facts which in the eyes of a naturalist show that the modifications in the flora and fauna of the globe and its different regions are the result of a development of species are so numerous and so varied that this convergence of facts towards one and the same theoretical conclusion cannot be due to chance. Either, then, this conclusion is in conformity with reality, or else we are in presence of a convergence of facts towards a false conclusion deliberately willed by the Author of Nature. For even were it true that the origin of each organic species is due to a *special* Divine intervention—that is to say, an intervention not necessitated by the previously existing order of Nature—it would still remain a fact that God has *de facto* arranged and willed the order of the appearance of organisms in time, and their distribution in space in the different ages of the earth, in such a way as to lead the naturalist inevitably to infer *by a legitimate induction*[1] the origin of

[1] I am well aware that certain pious but unenlightened souls think to serve the cause of Religion by endeavouring to weaken the probative force of the induction, and even invoke with this object some passages borrowed from Rationalist writers. But let them take care: in combating the principle of scientific induction they are putting themselves in opposition not only with good sense, but they are also undermining the certitude of the fact of the Christian and Catholic Revelation, the demonstration of which is altogether inductive in character. Unbelieving scholars are not unaware of this, and that is why after vainly endeavouring to combat Religion by arguments drawn from the data of modern science, they are at the present time falling back on the more dangerous and more subtle arm of scientific scepticism.

species by descent from pre-existing forms. If, then, this inference were false, it would be God who had formally willed to lead us into error. Now this hypothesis is absurd and blasphemous, since it represents the Creator as a deceiving deity. As the naturalist Romanes[1] pointed out, if the theory of evolution is not true, God would be, not a hidden God,[2] but untruthful.

It is to be noted that this first proof establishes merely the origin of species by evolution. It does not prove, at least directly, that there were no special Divine interventions in the course of this evolution. This point will be settled by the next two arguments.

II. The second principle which we shall invoke is one which is philosophically incontestable, and has in addition been defined as a dogma of faith by the Vatican Council.[3] It is that the object of creation is necessarily the manifestation of the glory of the Creator.

Before the science of Geology came into being, it was possible to suppose that God had successively intervened and

[1] Romanes, *Darwin and After Darwin*, vol. i, pp. 247-8.

[The following is the passage in question: "If the doctrine of special creation is taken to be true, then it must be further taken that the one and only principle which has been consistently followed in the geographical disposition of species is that of so depositing them as to make it everywhere appear that they were not thus deposited at all, but came into existence where they now occur by way of genetic descent. . . . We are familiar with the doctrine that God is a God who hideth Himself; here, however, it seems to me, we should have but a thinly-veiled insinuation, not merely that in His works He is hidden, but that in these works He is untrue." —TR.].

[2] Is. xlv, 15. This text of Isaias, which says that the ways of God are often unknown to us, so that we do not perceive their profound wisdom, was, as is well known, one of the things which led to the conversion to Christianity of the great English naturalist Romanes, who had long been an unbeliever. In this connection we may refer the reader to the interesting article by Mgr. J. Laminne, "*Une crise d'âme*" (*Revue Apologétique*, 1906).

[3] Sessio III, cap. i, § 2 and can. 5.

perfected His work by manifold operations. There was nothing absurd in this idea in itself. For instance, God could have produced the first germs of terrestrial plants when the earth had by its natural evolution become capable of providing them with nutrition. Then, when plants had increased and multiplied sufficiently in order to provide terrestrial animals with suitable nutrition, God could have created these in turn. This kind of harmonious development of the Divine work does not, it would seem, present any opposition to the perfections of the Creator. The same would be true of any cosmogonic system representing God as intervening in this way in order to build up his work in successive stages, spreading over a period those interventions which, so to speak, took place all together at the initial moment of time in the hypothesis of the instantaneous formation of our actual world held by the School of Alexandria. But this would necessitate that each special intervention should have as its object the introduction into Nature of a new degree of perfection which was not there previously, and not merely the repairing of dilapidations produced in Nature by the activity of natural causes.

Now it is precisely this latter that we should have to admit if we reject the idea that new species arise by a natural descent from the previous ones they were destined to replace. We should have to allow that God, Who manifests Himself to us in Nature, has set before us merely the work of an unforeseeing, clumsy, and unskilful artist. The world would resemble a clock which had to be repaired every day by the clockmaker. And let no one object that there is nothing to prevent a skilful artist producing the work of an unskilful artist if he so wishes. For if such a caprice might be possible in a man, it would be altogether impossible in God. For God is indeed free not to create, but once He creates, He cannot do otherwise than manifest His perfections by His work. This does not mean that the work of God must be perfect, for God alone is perfect, and it is necessary that the work presented to our notice should be sufficiently imperfect in order to enable us to see easily in this imperfection the sign

of its contingence, so that those who do not wish to see it are inexcusable. But this imperfection must be such that it simply brings home to us that the world comes from nothing, and not that it is due to the clumsiness or unskilfulness of its Author. But the latter would be precisely the case in the Creationist hypothesis: the end of the work (*finis operis*) of a world made in this way would be, not the glory, but the shame of the Divine Artist, which is impossible.

Our national pride as Belgians here prompts me to recall that at the time when the learned world, dazzled by the glory of Cuvier,[1] did not hesitate to accept the twenty-seven successive creations of Alcide d'Orbigny rather than renounce the Cuvian dogma of the fixity of species, a Belgian Catholic scientist arose and protested against this theory in the name of the attributes of the Creator, and defended the transformation of fossil species. D'Omalius d'Halloy was neither a theologian nor a metaphysician, but his good sense as a Christian naturalist had made him realise that these successive creations on the part of the Creator to repair His work " do not correspond to the idea which we possess of the perfections of God." How much more absurd would it be to accept the theory in the light of what we know to-day !

III. The third principle which, applied to the facts of palæontology, demonstrates with certitude the origin of species by natural evolution, is more theological than philo-

[1] We owe it to the honour of Georges Cuvier to point out that, contrary to what is generally thought, the illustrious founder of palæontology never held the theory of " successive creations." G. Cuvier was one of the chief defenders of the fixity of species, but he explained the variation of fauna in the successive strata of the known regions of the world by the annihilation of certain species and the migration of other forms. It was only later on, when the progress of science had shown the insufficiency of the theory of migrations to explain all the facts, that the partisans of the fixity of species found themselves obliged to imagine the theory of " successive creations."

sophical: it is the impossibility of admitting miracles as a cause of the natural order.[1]

It is important to understand the exact sense of the words "natural" and "supernatural." Theology teaches that the activity of God in the natural order includes all that is necessary for the primary constitution of Nature as He has conceived it, for its conservation, and for the exercise of its natural activities in order that it may attain in a normal manner the end assigned to its existence. The creation of matter in the beginning of time; the conserving influence of God, without which all things would relapse into nothingness; the concourse of God with secondary causes, without which these causes would never be able to exercise their natural activity; and lastly, the creation itself of the spiritual soul of man at the moment when the embryo acquires a human organisation by its natural development—a creation which is required in order that a human being may be generated by the natural activity of another—none of these transcends the natural order of things. In the same way, if we allow that inorganic matter as produced by God in the beginning has not within itself the activity necessary in order to become organised and transformed into a living being, then a special intervention on the part of the Creator, in order to introduce life on the earth at the moment when it has reached a stage of evolution fitting it to be a dwelling-place for living beings, would not be any more supernatural than if it had taken place at the beginning of time. I would say the same of a special intervention having as its object the introduction on the earth of a particular new degree of life, if such intervention were necessary for this end. For in these suppositions we are dealing with interventions which are necessary for the constitution of an order of natural perfections not already in existence.

But it would be quite different if God intervened in order to repair the harmony of an order previously established, for

[1] St. Augustine, *De Genesi ad litteram*, 1, II, cap. i; St. Thomas Aquinas, *In II Sent.*, Dist. xiii, q. i, a. 4; *Summa Theol.*, I p., q. xlvii, a. 4, ad 3 m.

in this case His intervention would be supernatural. A man who has two legs and two arms has nothing that is not natural, and if we allow that a special Divine intervention was necessary in order to give birth to the first man, this intervention would have been purely natural, although the first man would be endowed with two legs and two arms. But if God intervened in order to replace a member which has been amputated, then His intervention would be a miraculous one. In the same way if God were to create at the present time a new species to replace in the economy of Nature one which has been destroyed by the action of natural causes, nobody would hesitate to say that this Divine intervention was miraculous. Now it is precisely in this way, as we just pointed out, that we must regard the creationist hypothesis in view of modern knowledge and the concrete facts revealed by stratigraphic palæontology and geographical biology. Let us suppose, for instance, that an epidemic destroys all the horses or camels, either all over the world or else in a vast part of it, and that God, in order to repair this disaster, produced completely new horses or camels, or some other animal more or less closely related and capable of fulfilling the same rôle as the horse or the camel—who would hesitate to regard this production as a miracle at least as great as the restitution of an amputated member? Of course, in such a case a miracle would not be impossible. Moreover, since man has been raised to the supernatural order by God, it is fitting that God should manifest His paternal solicitude for His adopted children by means of miracles.[1] But previous to the origin of man, and

[1] In the hypothesis of man's elevation to the supernatural order, miracles are not only suitable, but absolutely necessary. By nature God reveals to man the natural truths which are necessary to him in order to attain his natural end. But once God chooses to reveal to man truths of a higher order, the knowledge of which is proportioned to the supernatural end to which God calls him, miracles become necessary; for it is impossible for God to reveal to man things other than those revealed by Nature except by manifestations which exceed the natural order—that is to say, by miracles. Such miracles may be physical or moral in character.

when there was question simply of instituting the natural order, a miraculous intervention on the part of God would have been contrary to the Divine Wisdom, since the cause would be altogether out of proportion to the end. Christian tradition, therefore, rightly rejects the hypothesis of miracles in the beginning of things.

It is obvious that the two last principles appealed to can serve as a foundation only for those proofs derived from palæontology and geographical biology, including under the latter term biological palæogeography. The fundamental principle of scientific induction, on the contrary, enables us to draw deductions from all kinds of facts. But stratigraphic palæontology, in demonstrating in a good number of cases that evolution has really taken place in the way that the facts of anatomy and comparative embryology lead us to suspect, has given an experimental confirmation, so to speak, of the legitimacy of the deductions drawn from these orders of facts, and thus helps to augment their probative force.

Although the inductive method can lead to altogether rigorous demonstration, and does so lead, as a matter of fact, in the question we are discussing, it nevertheless follows from its very nature that it is impossible to discover the exact boundary which separates the cases in which it gives a certain demonstration from those in which it simply enables us to conclude with a high degree of probability. Still, I think I am not wrong in saying that there are cases where the community of origin of different groups can be established with certitude, although it may not be directly proved by the facts of palæontology. Thus, for instance, it seems to me that we can regard as certain the common origin of fishes and aerial vertebræ. I could give other instances, but these would only interest specialists, and specialists are doubtless more capable than I am of estimating the degree of certitude belonging to the inductions drawn from anatomy and comparative embryology. It is important to understand exactly what I mean by "common origin." We know from Revelation that all human beings actually living on the earth have sprung from one single

couple. But revelation alone can give such details concerning origins. When a naturalist speaks of the common origin of various groups, he means that the organisms belonging to these various groups have all come either from identical forms or very similar ones: he does not mean that they come from one individual or from one single couple. Even Darwin confines himself to expressing the opinion that God breathed life into a small number of *forms* or else into one only, and not into one or a small number of individuals.

I have already said that in my opinion we can only affirm *with certitude* the truth of "a very advanced system of evolution," without going into further details. But the *probability* of the theory which derives all the species from very elementary forms is singularly confirmed by the Catholic principle that God makes use of the natural concourse of secondary causes as far as possible. As a matter of fact, I find it difficult to believe that, supposing that God had to intervene for the formation of the first living beings, his special intervention could have resulted in the formation of anything other than unicellular organisms; but I would not be so bold as to deny that any of these organisms were capable of evolving into a multicellular organism *right from the first generation*. However, nothing obliges me to accept this latter hypothesis, for I see no reason for denying to God the power of forming unicellular species of vegetal nature which would be capable of giving rise, *in the course of ages* by natural evolution and without any new special Divine intervention, to species of very complex organisation and possessing the highest attributes of animality.

This point remains to be established, against Moderate Evolutionists in particular.

Fourth Proposition.

The Catholic theory concerning the natural operations of secondary causes is sufficient to account for a natural transformist evolution such as Darwin held, and justifies us in

rejecting as altogether superfluous the other special interventions postulated, either by those who hold the Fixity of Species or by the Moderate Creationists. As to the special intervention postulated by Darwin, it seems difficult not to accept it, at least provisionally, given the actual state of our knowledge.

The philosophical principle which the Moderate Evolutionists and those who hold the fixity of species invoke, in order to establish that special Divine interventions, more or less numerous, have been necessary, is the principle of causality.

I propose to show first of all *a posteriori*, by a *reductio ad absurdum* based upon the logical principle, *qui nimis probat nihil probat*, that this argument is useless; then by means of a deeper study of the Catholic theory of secondary causes I will explain why special Divine interventions other than those postulated by Darwin are unnecessary.

A.—Refutation "a posteriori" of the Objection based on the Principle of Causality.

The principle of causality is derived immediately from the principle of sufficient reason, which is the first foundation of Christian metaphysics.[1] If, then, a theory is in contradiction with the principle of causality, this theory is certainly false.

In its developed form, the principle of causality can be enunciated as follows: All perfections found in an effect (*quidquid est perfectionis in effectu*) must be fully contained in the perfection of the totality of its causes. For otherwise being would have its sufficient reason in nothing.

The Fixists now argue: In the hypothesis of the origin of organic species by way of natural evolution, new specific perfections would be caused by ancestors which did not possess them. Therefore this hypothesis cannot be reconciled with the principle of causality.

[1] We consider that the Principle of Sufficient Reason is a first principle, and not a simple logical consequence of the principle of contradiction. See on this point J. Laminne, "*Le principe de contradiction et le principe de causalité*" (*Revue Néo-scolastique*, 1912).

The Moderate Evolutionists endeavour to harmonise facts and principles, and say that on the whole all the members of a subkingdom possess the same degree of perfection. From the philosophical point of view, then, each great group can be regarded as constituting one species, the subdivisions of which would be analogous to simple varieties. Hence they conclude that the principle of causality only requires the intervention of the Creator at the origin of each subkingdom.

Finally, the broadest among the Moderate Evolutionists content themselves with a special intervention for the passage from vegetable to animal life, and then from the animal to man. The vegetable, the non-rational animal, and the rational animal, constitute the ultimate branches of the Tree of Porphyry; each represents a particular order of perfection; but between plant and animal, and animal and man, there is an essential and irreducible difference, a gulf which cannot be crossed without a Divine intervention.

Let us first of all examine this latter system. Is there really between plant and animal a difference so profound that the passage from one to the other cannot be realised by Nature, but calls for a special Divine intervention distinct from the acts of His general government?

If we turn to phenomena, they will tell us in the first place that this chasm, which it is declared Nature cannot bridge, is bridged by Nature every day in the process of the generation of animals. An ovum, even when fecundated, is in point of fact a purely vegetable being, to which an animal soul cannot without absurdity be attributed;[1] and nevertheless this

[1] An interesting account of the origin and development of the theory of the "immediate animation" of the human fœtus by the rational soul is contained in the *Embryologia Sacra* of Cangiamila, a work published by an ardent defender of the theory, at a period (1745-1758) when it had reached its apogee. This was quite legitimate at that time. On the other hand, we are not exaggerating in the least when we regard the fact that this theory should still find defenders long after the experimental bases on which it was thought to be founded have been shown definitely to be false, as one of the most shameful things in the history of thought.

vegetable in the course of its embryonic development transforms itself into an animal. And this transformation takes place in such a way that it is impossible to say, even in the case of species whose embryonic development is open to our observation, at what precise point in this evolution sensibility appears. In the same way if we consider adult organisms in general there are very many cases in which one cannot say with certitude whether among the vital activities manifested there are any which constitute a true perception. We can form series of beings, in which the existence of sensibility is extremely doubtful for the lower ranks and then becomes more and more probable as one mounts higher until there is no room for any doubt. It may be said that this is because we lack methods of precise investigation, since it cannot be reasonably maintained that between perception and non-perception, and therefore the possession of a nature capable or incapable of perception, there is room for a middle term.

That is true to a certain extent. Accordingly I am careful not to maintain that there is no essential difference between an animal and a vegetable, if the two classes of beings are defined not from a purely anatomical point of view, as is done (and rightly) in Natural History, but from the psychological point of view. But what I deny is that this difference is more essential than that which can exist between two animals.

To anyone who reflects seriously, it is clear that we easily become the slaves of our classifications. Man might be defined as a classifying animal, and this definition would not differ from the received definition, since the element of the reasoning process is the proposition, and a proposition classifies the subject in the category expressed by the predicate or attribute. And since the attribute is expressed by a word, we are easily satisfied by words. This is the case, above all at times when philosophy is in a decadent state: formulas taken on trust dispense one from the labour of induction, which at other times all students had to undertake, following the example of the founders of philosophy.

A philosopher nowadays will often think he has said all

there is to be said when he has divided living beings into animals and vegetables, according as they possess or do not possess sensibility. And in consequence of this he may, in leaving the facts out of account, fancy that all the organisms included in the animal kingdom constitute a category of beings which are closely related from the psychological point of view, and very distant, on the other hand, from those included in the vegetable kingdom. I need not say that I do not mean that all philosophers nowadays reason in this way; but those who, in the name of philosophy, call for a Divine intervention for the passage from plant to animal, and content themselves with that, obviously regard the matter in the way indicated.

But anyone who pays attention to facts rather than to words cannot help seeing that this rather simple conception is in opposition to what we see in Nature, which presents us with a very complex gradation. Is it not clear that a being possessing only simple perception by one external sense (a perception which, moreover, may be extremely vague and very rudimentary), and a spontaneous movement corresponding to this perception, would from the psychological point of view be much nearer to an ordinary plant than to animals endowed with higher faculties resembling the superior organic faculties of man so closely that it is not possible to decide whether they are human or not from their acts taken individually, but only by the essential relations existing in the case of man between these acts and the spiritual operations of the rational soul? Also, as Aristotle,[1] and later on the Scholastic Doctors, especially Albert the Great,[2] had already noticed, many acts of these animals have the appearance of intelligence.

The older Scholastics regarded the matter in a way altogether different from our opponents. Thus St. Thomas Aquinas[3] teaches that the human embryo before it reaches a state

[1] Aristotle, Περὶ τὰ ζῷα ἱστοριῶν θ, α (*De animalibus historiae*, l. ix, cap. i).

[2] Albertus Magnus, *De animalibus*, l. viii.

[3] St. Thomas Aquinas, *Summa Theol.*, I p., q. cxviii, a. 2.

fitted to be animated by the intellectual soul must have been animated successively, not simply by a vegetative soul and then by an animal soul, as he has been supposed to maintain, but rather must have passed—*per multas generationes et corruptiones*—through a great number of substantial transformations. And Dante, the inimitable interpreter of the great Scholastic Doctors, in the passage of the *Divine Comedy* where he describes the evolution of the human embryo,[1] says that it is only

[1] Dante Alighieri, *La Divina Comedia*, II *Purgatorio*, Canto xxv, terz. 13-25. It will be not without its interest to give here the whole passage in which the poet sums up the notions current in his day concerning the ontogenetic development of man. In spite of the errors that these notions implied, one cannot but admire the philosophic exactitude and precision of the terms used, save in three points: (1) It was thought in the Middle Ages that the generating elements and the product of their union were not endowed with life, and that the embryo only acquired even its vegetative life in the course of its development; (2) it was also thought that the male element alone is active, and that the female element (the mother's blood) played only a passive rôle with regard to the former; (3) lastly, it was thought that the heart is the centre of organic life. It is accordingly in the heart that the blood receives the power of becoming assimilated to the different members of the body, and also of reproducing the totality of these members by transforming itself into sperm.

Sangue perfetto, che mai non si beve
Dall' assetate vene, e si rimane
Quasi alimento che di mensa leve,

Prende nel cuore a tutte membra umane
Virtute informativa, come quello
Ch'a farsi quelle per le vene vàne.

Ancor digesto, scende ov' è più bello
Tacer che dire; e quindi poscia geme
Sovr' altrui sangue in natural vasello.

Ivi s'accoglie l'uno e l'altro insieme,
L'un disposto a patire e l'altro a fare,
Per lo perfetto luogo onde si preme.

after the embryo has become self-moving and feeling (*come fungo marino*) that it applies itself to the formation of those powers of which it is the seed:

> ed ivi imprende
> Ad organar le posse ond' è semente.

E giunto lui, comincia ad operare,
Coagulando prima e poi avviva
Cio che per sua materia fe' constare.

Anima fatta la virtute attiva,
Qual d'una pianta, in tanto differente,
Che quest'è' n via e quella é già a riva:

Tanto ovra poi, che già si muove e sente,
Come fungo marino; ed ivi imprende
Ad organar le posse ond' è semente.

Or si piega, figliuolo, or si distende
La virtù ch' è dal cuor del generante,
Dove natura a tutte membra intende.

Ma come d'animal divegna fante,
Non vedi tu ancor; quest' è tal punto
Che più savio di te (*) già fece errante;

Si che per sua dottrina fe' disgiunto,
Dall' anima il possibile intelletto,
Perchè da lui non vide organo assunto.

Apri alla verità che viene il petto,
E sappi che, si tosto como al feto
L'articolar del cerebro è perfetto,

Lo Motor Primo a lui si volge lieto,
Sovra tanta arte di natura, e spira
Spirito nuovo di virtù repleto,

Che ciò che truova arrivo quivi tira
In sua sustanzia, e fassi un' alma sola
Che vive e sente e sè in sè rigira.

---

* Averroes, the great Arabian commentator on Aristotle.

Now the powers which the poet has in mind here are purely animal powers, for it is only very much later, when the brain has received the necessary organisation,

si tosto come al feto
L'articolar del cerebro è perfetto,

The following is Cary's translation of the above passage:

Blood, concocted well,
Which by the thirsty veins is ne'er imbibed,
And rests as food superfluous, to be ta'en
From the replenish'd table, in the heart
Derives effectual virtue, that informs
The several human limbs, as being that
Which passes through the veins itself to make them
Yet more concocted it descends, where shame
Forbids to mention: and from thence distils
In natural vessels on another's blood.
There each unite together; one disposed
To endure, to act the other, through that power
Derived from whence it came; and being met,
It 'gins to work, coagulating first;
Then vivifies what its own substance made
Consist. With animation now indued,
The active virtue (differing from a plant
No further, than that this is on the way,
And at its limit that) continues yet
To operate, that now it moves, and feels,
As sea-sponge clinging to the rock: and there
Assumes the organic powers its seed convey'd.
This is the moment, son! at which the virtue,
That from the generating heart proceeds,
Is pliant and expansive; for each limb
Is in the heart by forgetful nature plann'd.
How babe of animal becomes, remains
For thy considering. At this point, more wise,
Than thou, has err'd, making the soul disjoin'd
From passive intellect, because he saw
No organ for the latter's use assign'd.
Open thy bosom to the truth that comes
Know, soon as in the embryo, to the brain
Articulation is complete, then turns

that the animal embryo becomes a human infant, by the action of the First Mover, who breathes into it:

Spirito nuovo di virtù repleto.

And it is surely true that one of the Cœlentera hardly verifies the generic notion of animal abstracted from the concrete knowledge we possess of things which everybody regards as animals, such as dogs, horses, monkeys, birds, etc.

But how many stages there are between these lower animals or between others lower still in the scale which hardly deserve the name, and the higher animals which are fully endowed with all the perfections of animality! And how many different shades of perfection there are among the higher animals even from the psychological point of view!

On the other hand, while it is true that we cannot admit a real continuity between the lowest animals and simple plants, we must nevertheless recognise that the simple faculty of feeling allows of very different stages of perfection, and we do not quite see that it is possible to assign to this faculty a minimum degree, such that the Creator could not possibly conceive and realise an animal less removed from a pure vegetable than any given animal.

From all this we conclude that the theory which declares a special Divine intervention to be necessary for the passage from plant to animal, and limits itself to this, is the most illogical of all the theories of moderate evolution. For if the principle of causality does not allow us to dispense with this special intervention, it would call for very many others, and with greater reason.

Will it suffice to admit special interventions at the origin of

---

The primal Mover with a smile of joy
On such great work of nature; and imbreathes
New spirit replete with virtue, that what here
Active it finds, to its own substance draws;
And forms an individual soul, that lives,
And feels, and bends reflective on itself.

the subkingdoms? Evidently not, for, even if we confine ourselves to the animal faculties, the perfection of these faculties presents extremely varied grades within one and the same subkingdom, and we should thus be led of necessity to postulate special Divine interventions in cases where the application of the principles of Catholic philosophy to the best established of all facts has shown that such interventions cannot be allowed.

But we can go farther still. The principle of causality does not limit itself to affirming that the effect cannot be more perfect than its cause: it requires that all the perfections in the effect must be contained in the perfection of the sum-total of its causes. Now a greater perfection, or even one of a higher order, does not necessarily contain every lesser perfection: for instance, the perfection of corporeal natures, or even of the human soul, is not contained in the perfection of angelic nature. The inference which our opponents draw from the principle of causality would thus lead us very much farther than the Fixists themselves would wish. For new races are characterised by perfections which are not generally contained in the perfections of their ancestors, and these new perfections are sometimes, let it be noted, of the psychological order. It would accordingly be necessary to have a special intervention at the origin of each race. Let us go yet farther. Every organism has a certain power of adapting itself to its surroundings, such as climate, etc., or, as we say to-day, to its environment. To adapt oneself to circumstances is not a fault—it is a perfection; and since the nature of the adaptation may be reversed in different circumstances, it would consequently be absurd to say that the variety which has adapted itself is always less perfect in itself than its stock. If, then, an individual of a given race, transplanted to a place where none of its ancestors has ever dwelt, adapts itself to its surroundings by means of new morphological or physiological characteristics, this also will call for a special intervention! But why dwell on these details? What is life, in the case of a corporeal being, if not a continual self-modification? Now to modify

oneself is to acquire a perfection which one did not previously possess. It is of no avail to introduce here distinctions between essential and accidental perfections. The principle of causality is a universal, transcendental principle, and such a distinction is therefore inadmissible. The argument of the Fixists, even of the most moderate among them, would accordingly lead us to deny the most obvious facts, or else to see special Divine interventions in all vital acts, which is absurd, since it is tantamount to denying altogether the natural order.

Let us now see how the Catholic theory concerning the activity of secondary causes meets the difficulty proposed.

B.—The Catholic Theory concerning the Natural Activity of Secondary Causes and its Application to the Theory of Transformist Evolution.

The Catholic theory has already been formulated in general terms from the works of the Fathers. It consists first of all in the distinction between God's ordinary government of Nature, which is always in action, and the production by the Creator of the *rationes seminales*, or seminal powers with which created things were endowed from the beginning.

The governing of Nature is a necessary consequence of the act of creation which produces beings capable of evolving, and we therefore understand why St. Gregory of Nyssa is able to speak of the one impulse of the Divine will, by which all things existed in potentiality and as it were in a sort of spermatic force destined to give birth to everything.

That which we, with St. Augustine and the Scholastics, term the government of the universe simply signifies the dependence of the creature, both for its being and for its operations, upon its Creator, the Universal Cause of the being and activity of created things.

There is nothing more essential to a creature than to be a creature—that is, to depend essentially from God for its being. Just as it would be ridiculous to suppose that my

thought could exist, even for an instant, without actually proceeding from the activity of my mind, so also, but with far more reason, it would be absurd to imagine a creature whose existence did not actually proceed from the activity of the First Being.

On the other hand, every created nature is essentially active, since it is an analogical representation of the Divine Essence, which is Pure Activity. The activity of each created thing is nevertheless limited, because the created nature is but a representation, a very imperfect shadow as it were of the Divine Nature. Its activity is subject to laws, which are not Divine decrees imposed upon the nature of the creature, but necessarily flow from it, inasmuch as the nature of the created thing and its activity are the realisation of a Divine idea, and all Divine ideas are of necessity duly ordered. That is why these laws are called natural laws. But the activity of creatures is essentially dependent upon the Divine activity, just as their being is essentially dependent upon God's being or activity (which are identical). It is this essential dependence, which, at least in my opinion, is not really distinct from the being and activity of the created thing,[1] that constitutes the conservation of creatures by God, and His ordinary *concursus* with the operations of creatures. By this *concursus* God moves creatures to act as the nature of the activity of each one demands in the circumstances in which it is called upon to act. The movement or motion, in so far as it is universal, comes from God the Universal Mover; its determination depends upon the nature of the created agent and the circumstances. The effect produced by the action of the creature, being itself a created thing, cannot but depend immediately upon the Divine activity, and in the case in which the origin only of the effect depends upon its created cause, the Divine action will persist alone after the created cause has ceased to act, in order to keep the effect in existence. Finally, it may happen that in order that the natural activity of a creature

[1] H. de Dorlodot, *Questionum quodlibetalium Prima : De vera creationis notione*, Sect. II, art. ii, b, q. 2.

may attain to the end for which it is intrinsically destined, a condition is required which can only be realised by God. Such is the case with the creation of the human soul, without which the generative activity of man would not reach its natural terminus. The creation of the human soul in a human embryo which has reached the necessary stage in its evolution is as natural, and as necessary, as the Divine *concursus* with secondary causes, or the conservation of the effects produced by the latter. Moreover, it belongs to the same order: the conservation of the human soul is simply the continuance of its creation. The conservation of creatures, the *concursus* with their activity, and finally the creation of the human soul when the disposition of matter calls for it, are the three acts of the natural government of the world by God. These acts are necessary, and are required by the natural laws which are bound up with the very nature of beings: not, indeed, that God is thus subject to or necessitated by creatures, but because these three things, constituting in point of fact simply the dependence of the creature on the Creator, follow necessarily from the Divine decree by which God willed to create the world with its natural activities, foreseeing and willing all that this involves. Thus the necessary order of development of the world is included in what St. Gregory of Nyssa terms the primary impulse of the Divine Will.

This primary impulse, for St. Gregory of Nyssa as for St. Augustine and indeed also for the Alexandrine School, was complete in the mathematical instant of the origin of time, and is thus identical with the act of creation. At the same time it is open to us, as we have said, to suppose that it was realised in many acts, if sufficient reasons are forthcoming. Each one of these acts would then constitute a special Divine intervention in the order of Nature. I say " in the order of Nature," for tradition is agreed that there are special Divine interventions in the supernatural order, but this is beyond the scope of this Conference. We have seen that the special interventions in the order of Nature which we are free to postulate, if the state of science demands them, can only affect the organi-

sation of the world, and not its repair. And scientifically attested facts, examined in the light of the traditional principles of Christianity, have led us to conclude already that the immediate result of such interventions in the formation of the world of life must have been confined to the appearance of primitive organisms, which did not possess the perfections which they have caused in their descendants.

The question which we now have to solve is accordingly this: How can this conclusion be reconciled with the principle of causality ?

Catholic philosophy enables us to give a very clear answer to this question. The principle of causality requires that the perfection of the effect should be contained in the perfection of the totality of its causes. But experience proves that the perfection of the effect is never contained adequately in the perfection of its created causes. If, then, the created cause is able to act, it is not as the sufficient cause, but as an instrument of the Creator. Now it belongs to an instrument to produce perfections which it does not itself possess, and of which the sufficient reason must be sought in the principal cause of which it is an instrument. That is why the active powers possessed by creatures are never more than *rationes seminales*, as St. Augustine is careful to point out.

We can only obtain a knowledge of Divine things, and even of the relations between God and creatures, by analogies, always very imperfect, drawn from creatures. Let us endeavour first of all to obtain some idea of instrumental causes and of *rationes seminales* without going outside the created order, and abstracting from the Divine causality.

A sculptor carves a statue out of marble. Who is it that makes the statue ? Is it the artist or his chisel ? Both. And this is so true that every one of the traits has been graven in the marble by the one just as much as by the other. We can say with perfect truth that the chisel has made a work of art. It did not, however, possess the artistic idea which it has realised in the object: it only possessed the hardness and sharpness which rendered it capable of cutting the marble

but not in a particular ordered way. If it has carved an artistic figure, it is because it has acted as the instrument of an artist.

In this first example, the instrument is only able to execute the work of art, provided it is guided and directed at each moment by the artist. The chisel considered in itself, and when not actually moved by the hand of the artist, is accordingly not an instrument, strictly speaking: it is merely fitted to become one, and it becomes an instrument in reality only while it is being manipulated by the artist. It is what we may call a transitory instrument. In the case of an instrument of this category, the principal cause does not impress a seminal power upon its instrument, or at least not a complete and perfect seminal power, since the principal cause has to introduce a new determination in order that the instrument may produce the work in question.

It is quite different in the case of a musical box, which is a permanent instrument[1] of the art of the one who constructed

[1] It is by means of this distinction between a transitory and a permanent instrument that Cajetan refutes the objections of Scotus against the instrumental causality attributed to the seed by St. Thomas: " Non enim semen et seminans concurrunt ad genitum ut pater et avus, sed quemadmodum in littera dicitur, ut agens et instrumentum agentis.—Sed quoniam duplex est instrumenti genus, quoddam participans virtutem ab agente derivatam in esse permanenti, quoddam vero in esse successivo, creditur, et male, quod instrumentum participans virtutem activam in esse permanenti non sit instrumentum, sed causa ipsa agens, Cum tamen hoc nihil referat: non minus enim serra faceret scamnum instrumentaliter, si artis vim, etiam artifice submoto, retineret, ut patet in horologiis et in molendinis et aliis hujusmodi, quibus non oportet adesse semper artifices, quandiu scilicet vim artis in impresso ordine, participant " (*In I St. Thomae*, q. cxviii, a. 1).

The following is a rough translation of the passage:

" The seed and the person from whom it comes do not concur in producing the thing generated as the father and grandfather may be said to do, but rather as the agent and its instrument, as is pointed out in the text of St. Thomas. But since there are two kinds of instruments—the one permanently sharing in the power derived

it. The musical box is not an artist any more than the chisel, but its artificial construction has endowed it with a kind of impress of art which renders it capable of playing a certain number of airs without a new intervention on the part of the musician. This permanent power of producing certain determined works of art upon the realisation of certain conditions, without a new intervention on the part of the artist who is the principal cause, already admits of comparison with the seminal powers of St. Augustine, and the σπερματικαὶ δυνάμεις of St. Gregory of Nyssa. If we were to construct a machine capable of producing musical boxes, this machine, thanks to the seminal powers received from its maker, would be capable of producing musical tunes, not directly, but by the intermediary of an instrument nearer to the desired end, and receiving from the machine seminal powers different from those possessed by the latter. Let us notice in passing that if the machine which turns out the musical boxes is further removed from the object aimed at by the art of the musician, it nevertheless presupposes more ingenuity in its maker than a simple musical box would.

Musical boxes, and machines which make them, although permanent instruments, are nevertheless artificial, and not living ones. On the contrary, an egg is a natural and living instrument. It is the substantial nature received from its generators which renders the egg capable of developing into an embryo, and later on into a finished animal. The seminal powers of the egg are not something added over and above its nature, as the arrangement of the parts of a machine is

---

from the agent, and the other for a time only, it is wrongly said that an instrument of the first kind is not a real instrument, but the acting cause itself. This does not make any difference. For it would still be true that a saw was making a stool instrumentally, even though it retained the power when the worker is absent, as is evident from clocks, windmills, and other such things. In these cases the workmen are not always required, provided the works continue to share in the power according to the order impressed upon them."

something added to the nature of the substances which compose it. The egg's power of directing its vegetative faculties, not after the manner of a simple unicellular vegetable, but in such a way as to develop into a complex animal endowed with all the perfections of its species, comes from its very nature. I say " develop into," for this substantially one thing, the egg, is alive, that is to say it has the power of acting upon itself. That is why it transforms itself. And as its evolution proceeds, it produces in itself new faculties of development or seminal powers which take the place of the old ones, just as the seminal powers of the musical box come from those of the machine which makes them. But all these active powers, at whatever stage they may appear, come ultimately from the generators. It is to its generators that the egg owes the nature, which is destined to produce a being possessing the perfections of the generators. That is why we say that the egg, and the embryo after it, are the natural instruments of the generators for the reproduction of the species.

In the same way, but with far more reason, Catholic philosophy teaches that every created thing is by its very nature an instrument of God. And, applying the classification which we adopted just now, we can add that in all its natural operations the creature is a permanent instrument. For although it cannot act without the actual concurrence of God, nevertheless it is not this concurrence considered in itself which determines the nature of its operations: this determination depends solely upon the nature of the created agent and the circumstances of its action, as we have seen. And if we say that a creature can only act as an instrument of God, it is not so much because of the necessity of the Divine *concursus*, as because a created agent never adequately possesses the perfections of the effects which it produces, and in consequence its active powers always have the nature of seminal powers.

This is the case even when the effect is altogether similar to its created cause, as would be the case in the generation of living beings, if we leave variation out of account. For the

son only resembles his father, and since his being is of the same order as that of his father, the perfection of the son's being is in no way contained in the perfection of the father. For there is more being, more perfection *in ratione essendi* as the Scholastics say, in two animals of the same species than in one only. That is why the sufficient reason for the production of a new animal, as for any new being or perfection, can only be found in the Divine Being, which, in its transcendence, possesses all the perfections of created being without any mixture of imperfection or limit of any kind.[1]

But as a general rule the insufficiency of created causes from the standpoint of the principle of causality is not limited to the perfection of being. Very often it also affects the grade of perfection which these causes produce. Thus, when my mind conceives an idea, it produces within itself a perfection which it did not possess before,[2] and of which the sufficient reason can only be found in Him who is essentially Pure Understanding. Our intellectual faculty is accordingly only a seminal power, since it does not possess the perfection of its effect. The same applies to the will, which can only act as an instrument of the one who is Love by Nature. If we run through the different acts of animal faculties, we shall find in the same way that the perfection of these acts is not contained in the perfection of the faculties which produce them. Take vision, for instance. Neither the living organism considered in itself with all its faculties, nor the physical image of the visible object which is formed at the back of the eye, nor the chemical modifications by which this image is imprinted in

[1] The perfection of the being of an individual is restricted, not only to the limits of its specific nature, but also to those of its individuality. The sufficient reason of this individual thing can accordingly only be found in the Absolute Being, which is infinitely perfect, without limitation of any kind, and without any mixture of imperfection.

[2] I refer to the intellect, even when fecundated by the *species impressa* and thus constituted *in actu primo proximo et expedito ad operandum.*

the layer of pigment cells or choroid as on a photographic plate, nor the physical or chemical modifications which doubtless follow in the retina, the optic nerve, and in the brain, nor even the sum of all these things, possesses a perfection which can be compared to that which consists in the intuitive perception of the visible object. And still the visual faculty excited by the physical or chemical modifications of its organ reacts so as to produce in itself this act of perception. The created cause of this act is accordingly only a seminal principle, since it does not possess within itself the sufficient reason of its effectiveness; and it is clear that this sufficient reason can only be found in Him who is essentially Transcendental Life.

We could go on to show that the same is true of the operations of vegetative life, and also for those of inorganic matter. But let us return to the generation of living beings, which concerns us more closely.

It would appear that we allowed as a first approximation that if we suppose all variation to be absent, and if we also leave out of consideration the perfection of being, the sufficient reason of the generation of a living being might be found in its generator. Is this quite exact?

Let us first of all examine species with alternating generation. Neither of the two generations contains the perfection of the other, whether from the morphological or the physiological point of view. The *ratio speciei*, or "idea of the species," so to speak, is only realised in the complete cycle. The same applies to species which are subject to metamorphosis, and this is particularly evident when in the adult stage they present manifest signs of degeneration. Take, for instance, the Sacculinæ which, after leading during their youth a very active, very animal life in the form of Crustacea, proceed subsequently to deprive themselves of all their apparatus of animal life and reduce themselves to a tiny cellular mass which penetrates into a crab and transforms itself, in the adult stage, into a simple reproductive apparatus, living beneath the abdomen of the crab and deriving its nourishment by means of roots which penetrate deep into the interior of the latter. This

organism, at the age when it produces its sexual elements, has accordingly lost all the attributes of animality, so that, if we regarded it from a purely psychological point of view, we ought to regard it then as a simple vegetable, and yet it produces eggs which evolve into organisms possessing animal life in a relatively high degree.

But even when the adult stage does not manifest itself by a degenerate form, it is often easy to see right from the first that the "idea of the species" is fully realised only by the complete cycle of evolution. It suffices to call to mind the profound differences which characterise insects compared with their larvæ, or again, the frog with its tadpole—differences which affect not only the form and organisation, but also the animal faculties and instincts. We can proceed to make a generalisation, for if we remember that in order to be more perfect than another it is not necessary to possess the perfections of the latter, the facts will then lead us, in my opinion, to infer that the perfections of the different stages of the embryonic life of an animal are in general not contained in the perfection of the adult, which nevertheless causes them by producing the generating element. Here, again, the idea of the species is only realised by the complete cycle of the ontogenetic evolution. Now what is this "idea of the species," strictly speaking, if not the idea of the Divine Artist, of whom the organism in its various phases and the reproductive cells themselves are the marvellous instruments? This is in the mind of St. Thomas Aquinas when he says "Nature is nothing else but a 'reason' of a certain art (*ratio cujusdam artis*)—namely, the Divine Art, impressed upon things (*indita rebus*) in virtue of which these direct themselves towards a determined end, just as if a boat builder were to give to the pieces of wood the power of moving themselves so as to form a boat."[1]

[1] "Unde patet, quod natura nihil est aliud quam ratio cujusdam artis, scilicet divinae, indita rebus, qua ipsae res moventur ad finem determinatum: sicut si artifex factor navis posset lignis tribuere, quod ex seipsis moverentur ad navis formam inducendam" (*In II Physicorum Aristotelis, Lectio* XIV.).

And these "reasons" of the Divine Art impressed upon or innate in natural things are, as St. Thomas elsewhere says,[1] exactly what St. Augustine calls the "seminal reasons."

If I were to ask a Creationist: "When God created the species *gallina*, did He directly produce the egg or the hen?" he would doubtless reply: "The hen." But what would he reply if I were to put the same question *à propos* of an organism with alternating generation—a fern, for instance, of which the sexual generation (*prothallium*) manifests itself in the form of a small green blade, while the non-sexual generation which arises from this is a plant with a stem which is sometimes arborescent (as in the case of the tree fern), with leaves and roots? Whatever the reply, it is evident that the first ancestor did not contain the perfection of the generation which was to come from it, since the fern is a cormophyte organism and woody, and its prothallium is a thallophyte. The preceding remarks show that we can apply this reasoning generally, since the adult does not contain the perfections of the various embryonic phases of its descendants, and if it is able to produce them, it is simply and solely because its genital cells—and we might add, at least to a certain degree, each one of its cells—contain the seminal causes of the whole embryonic development.

Is the power of seminal causes limited to the specific cycle? I think I have abundantly shown that the principle of causality cannot solve this question. Accordingly we do not see by what right we could deny *a priori* that God was able to produce primitive organisms possessing an instrumental power sufficient to give rise to the most widely differing organisms in the course of centuries. Did God use this power? The attentive study of the facts and the logical conclusions which can be deduced from them can alone give us information on this subject, for observation and induction alone can teach us

[1] *De Veritate*, q. v, a. 9, ad 8 m.; *In II Sent.*, Dist. xiii, q. i, a. 1; *ibid.*, Dist. xviii, q. i, a. 2; *Summa Theologica*, I p., q. cxv, a. 2.

the laws of Nature. Thus by following this method we have reached, like Darwin, a conclusion very closely resembling that of St. Augustine and St. Gregory of Nyssa.

C.—Reasons for accepting the Special Intervention postulated by Darwin.

Can we take a final step and accept the theory of absolute evolution? I would like to reply in the affirmative. But in the first place nothing in the actual phenomena of Nature authorises us to do so. In spite of the most active research, it has not been possible to find either an intermediary or a passage from inorganic matter to the living cell. Moreover, the fundamental laws of life are opposed to those of ordinary matter: the latter, if left to itself, tends towards simple and stable arrangements, while living matter, on the contrary, tends towards complex and relatively unstable arrangements. Lastly, in inorganic matter, each element acts on its own account, and tends towards its own end: accordingly it does not seem that such matter can be the seat of natural powers tending towards the formation of a complex being which is at the same time endowed with unity and organisation, of which the different parts have the faculty of directing their action essentially towards the end of the whole.

But I should like to think I am mistaken in this, and I would thank anyone who could show me the way to abandon Darwin[1] honestly, in order to follow Augustine and Gregory on this matter.

Still, while the actual state of science does in fact seem to prevent our accepting in all its fulness the magnificent conception of the Fathers on the origin of the world, we must at the same time recognise that the work of the Creator as

[1] When we speak of Darwin's opinions, we allude only to those which he expressed in his own writings, published by himself, and which he maintained right up to his last publications, and not to the more or less transitory doubts of which traces may be found in his voluminous correspondence.

revealed by modern science is far more beautiful than Antiquity ever dreamed. For the beauty of Nature consists not only in the activity of its powers, which, derived from one and the same origin, converge towards the ordered unity which compels our admiration. It consists also in the marvellous variety of the parts which, proceeding from one principle, converge towards one sole end. After all, what are the marvels of the organisation and functions of the human body as exposed by St. Gregory of Nyssa in his treatise on Man compared with what we know at the present time? What comparison is there between the Astronomy of the ancients and the complicated details of the movements of the stars as measured by scientists to-day, and which can all be reduced to the simple law of Newton? What is the "academic thesis" of St. Gregory of Nyssa on the origin of the world in presence of the theory of Laplace and the teachings of Geology? Lastly, if one examines it in the concrete, what is the theory of evolution of the inorganic world such as St. Augustine held it when compared with what modern evolutionary theories put before us: God planting life in the world at the moment willed, with the power of developing itself; the first organisms multiplying and enveloping into the most varied forms by a series of slow transformations occupying an innumerable multitude of centuries, in the midst of ever-changing circumstances to which they were able to adapt themselves? Sometimes, if circumstances become unfavourable, we see brilliant series perish. But these losses are soon made good, and the forms which have disappeared are replaced in the economy of Nature by myriads of new beings, often more perfect and better equipped than those which preceded them. And this comes about, not by a new intervention of the Divine Artist obliged to repair His work, but because there always remain in the treasury of seminal powers implanted in the world by the one act of the Divine Wisdom sufficient resources to enable artistic nature to repair its losses.

All this shows, it seems to me, that the more science pro-

gresses, the more resounding becomes the voice of Nature proclaiming the glory of its Creator. And among the heralds employed by Nature in order to spread its voice right to the extremities of the globe,[1] I think that it is only right to put

[1] Ps. xviii (Hebr. xix) vv. 4 and 5:

> It is not a language, or words
> Whose voice is not heard.
> Their sound runs through the whole earth,
> Their accents go right to the extremities of the world.

This text concerns directly only the language of the heavens; but it is clear that it is equally applicable to the whole work of Nature. In many other passages Holy Scripture depicts the various parts of the Universe as lifting up a concerted praise towards their Creator.—Elsewhere it teaches us in a more doctrinal form that Nature reveals to us with certitude the existence and perfections of the Creator, and that those who will not understand this teaching are inexcusable. We give below two passages of this kind.

The first comes in chapter xiii of the Book of Wisdom:

" They do not know how to make use of their nature (*i.e.*, of their natural faculties), these men who are ignorant of God (Μάταιοι μὲν γὰρ πάντες ἄνθρωποι φύσει οἷς παρῆν θεοῦ ἀγνωσία), and who by the things which they see to be good have not known how to attain the knowledge of Him who is; and who, considering the works, have not recognised the Workman, but have believed that either the fire, the wind, the subtle air, the circuit of the stars, the impetuous water, or the torches of heaven are the gods which govern the world.—If being charmed by the beauty of these things they have believed them to be gods, let them know how much more excellent is the One who governs them. If they admire their power or their effects, let them understand thereby how much more mighty is the One who has made them. For it is in proportion to the greatness and beauty of the works that one appreciates their author. . . . They make exact and detailed researches concerning the works, and judge from what they observe that the visible world is beautiful. Still, they are no more excusable. For if they have pushed their knowledge far enough to know the world well, how is it that they have not sooner discovered the One who guides it?"

Charles Darwin in the first rank, side by side with that other glory of Cambridge, Isaac Newton.

But, after all, what is all that we know compared with what we do not know? The progress of science serves above all to bring home to us how great our ignorance still is, and how far we are from knowing the secrets of the Divine Art in their depth and variety.

And even were we to know all the secrets of Nature, after we had subjected the marvels of the Divine Wisdom therein manifested to a close scrutiny, there would always remain between the Wisdom revealed in the works of God and the Divine Wisdom as it is in Itself the distance which separates the finite from the infinite. For God alone is able to penetrate the depths of his own Wisdom, just as God alone is able to pronounce His own name:

> Savez-vous son nom? La nature
> Réunit en vain ses cent voix.
> L'étoile à l'étoile murmure:
> Quel Dieu nous imposa nos lois?
> La vague à la vague demande:
> Quel est celui qui nous gourmande?
> La foudre dit à l'aquilon:
> Sais-tu comment ton Dieu se nomme?
> Mais les astres, la terre et l'homme
> Ne peuvent achever son nom.[1]

The second is from St. Paul (Rom. *i*, 18-20):

"God reveals from the height of heaven His wrath against the impiety and injustice of men who culpably hold the truth captive (τῶν τὴν ἀλήθειαν ἐν ἀδικίᾳ κατεχόντων, that is to say, prevent it from manifesting itself freely to their minds). For the knowledge of God is clearly set forth to their conscience, God having manifested it to them. For, in consequence of the creation of the world, God, although invisible, by making Himself known to the intelligence by His works, has rendered Himself perceivable, as well as His eternal power and divinity; so that they are inexcusable."

[The above are English equivalents of the author's direct translation from the Greek.—Tr.].

[1] Lamartine, *Hymne à la nuit*.

Knowest thou His name? Nature vainly unites its hundred voices. Star murmurs to star: What God has imposed our laws upon us? Wave asks of wave: Who is He who chides us? The thunderbolt says to the tempest: Knowest thou how thy God is named? But the stars, the earth, and man are unable to achieve His name.

APPENDICES

APPENDIX I

EXTRACTS FROM THE ENCYCLICAL *PROVIDENTISSIMUS DEUS* OF LEO XIII (18TH NOVEMBER, 1893)[1]

NULLA quidem theologum inter et physicum vera dissensio intercesserit, dum suis uterque finibus se contineant, id caventes, secundum S. Augustini monitum, "ne aliquid temere et incognitum pro cognito asserant."[2] Sin tamen dissenserint, quemadmodum se gerat theologus summatim est regula ab eodem oblata: "Quidquid, inquit, ipsi de natura rerum veracibus documentis demonstrare potuerint, ostendamus nostris Litteris non esse contrarium; quidquid autem de quibuslibet suis voluminibus his nostris Litteris, id est catholicae fidei, contrarium protulerint, aut aliqua etiam facultate ostendamus, aut nulla dubitatione credamus esse falsissimum."[3]

De cujus aequitate regulae in consideratione sit primum, scriptores sacros, seu verius "Spiritum Dei, qui per ipsos loquebatur, noluisse ista (videlicet intimam adspectabilium rerum constitutionem) docere homines, nulli saluti profutura;[4] quare eos, potius quam explorationem naturae recta persequantur, res ipsas aliquando describere et tractare aut quodam translationis modo, aut sicut communis sermo per ea ferebat tempora, hodieque de multis fert rebus in quotidiana vita, ipsos inter homines scientissimos. Vulgari autem sermone quum ea primo proprieque efferantur quae cadant sub sensus, non dissimiliter scriptor sacer (monuitque et Doctor Angelicus) "ea secutus est quae sensibiliter apparent"[5] seu quae Deus

[1] *Acta Leonis P. P. XIII* (Desclée's edition), vol. v, pp. 219-222.
[2] *In Genes. op. imperfect.*, ix, 30.
[3] *De Genesi ad litteram*, i, 21, 41.
[4] St. Aug., *ibid.*, ii, 9, 20.
[5] *Summa Theol.*, I p., q. lxx, a. 1, ad 3.

ipse, homines alloquens, ad eorum captum significavit humano more.

Quod vero defensio Scripturae sacrae agenda strenue est, non ex eo omnes aeque sententiae tuendae sunt, quas singuli Patres aut qui deinceps interpretes in eadem declaranda ediderint: qui, prout erant opiniones aetatis, in locis edisserendis ubi physica aguntur, fortasse non ita semper iudicaverunt ex veritate, ut [non] quaedam posuerint, quae nunc minus probentur. Quocirca studiose dignoscendum in illorum interpretationibus, quaenam reapse tradant tanquam spectantia ad fidem aut cum ea maxime copulata, quaenam unanimi tradant consensu; namque "in his quae de necessitate fidei non sunt, licuit Sanctis diversimode opinari, sicut et nobis," ut est S. Thomae sententia:[1] Qui et alio loco prudentissime habet: "Mihi videtur tutius esse hujusmodi, quae philosophi communiter senserunt, et nostrae fidei non repugnant, nec sic esse asserenda ut dogmata fidei, etsi aliquando sub nomine philosophorum introducantur, nec sic esse neganda tanquam fidei contraria, ne sapientibus hujus mundi occasio contemnendi doctrinam fidei praebeatur."[2] Sane quamquam ea, quae speculatores naturae certis argumentis certa iam esse affirmarint, interpres ostendere debet nihil Scripturis recte explicatis obsistere, ipsum tamen ne fugiat, factum quandoque esse, ut certa quaedam ab illis tradita, postea in dubitationem adducta sint et repudiata. Quod si physicorum scriptores terminos disciplinae suae transgressi, in provinciam philosophorum perversitate opinionum invadant, eos interpres theologus philosophis mittat refutandos.

At nefas omnino fuerit, aut inspirationem ad aliquas tantum sacrae Scripturae partes coangustare, aut concedere sacrum ipsum errasse auctorum.

Nec enim toleranda est eorum ratio, qui ex istis difficultatibus sese expediunt, id nimirum dare non dubitantes, inspirationem divinam ad res fidei morumque, nihil praeterea,

[1] *In Sent. II*, Dist. i, q. xi, a. 3.
[2] *Opusc.* x.

pertinere, eo quod falso arbitrentur, de veritate sententiarum quum agitur, non adeo exquirendum quaenam dixerit Deus, ut non magis perpendatur quam ob causam ea dixerit. Etenim libri omnes atque integri, quos Ecclesia tanquam sacros et canonicos recipit, cum omnibus suis partibus, Spiritu Sancto dictante, conscripti sunt; tantum vero abest ut divinae inspirationi error ullus subesse possit, ut ea per seipsa, non modo errorem excludat omnem, sed tam necessario excludat et respuat, quam necessarium est, Deum, summam Veritatem, nullius omnino erroris auctorem esse.

Haec est antiqua et constans fides Ecclesiae, solemni etiam sententia in Conciliis definita Florentino et Tridentino; confirmata denique atque expressius declarata in Concilio Vaticano, a quo absolute edictum: "Veteris et novi Testamenti libri integri cum omnibus suis partibus, prout in ejusdem Concilio (Tridentini) decreto recensentur, et in veteri vulgata latina editione habentur, pro sacris et canonicis suscipiendi sunt.[1] Eos vero Ecclesia pro sacris et canonicis habet, non ideo quod sola humana industria concinnati, sua deinde auctoritate sint approbati; nec ideo dumtaxat, quod revelationem sine errore contineant; sed propterea quod Spiritu Sancto inspirante conscripti, Deum habent auctorem."[2]

Quare nihil admodum refert, Spiritum Sanctum assumpsisse homines tanquam instrumento ad scribendum, quasi, non quidem primario auctori, sed scriptoribus inspiratis quidpiam falsi elabi potuerit. Nam supernaturali ipse virtute ita eos ad scribendum excitavit et movit, ita scribentibus adstitit, ut ea omnia eaque sola quae ipse iuberet, et recte

[1] All exegetes and theologians agree to-day in recognising that the Councils did not intend to affirm by these words that the Vulgate translation is accurate on every point. This is evident from the *Acts of the Council of Trent;* and Leo XIII, elsewhere in his encyclical, recommends the consultation of the original texts, Greek and Hebrew, although, as he says, the Vulgate is generally accurate. These decrees simply make clear what are the books and parts of books recognised as canonical by the Church.

[2] Sess. III, c. ii, *de Revel.*

mente conciperent, et fideliter conscribere vellent, et apte infallibili veritate exprimerent: secus, non ipse esset auctor sacrae Scripturae universae.

Hoc ratum semper habuere SS. Patres: "Itaque, ait Augustinus, quum illi scripserunt quae ille ostendit et dixit, nequaquam dicendum est, quod ipse non scripserit: quandoquidem membra eius id operata sunt, quod dictante capite cognoverunt";[1] pronunciatque S. Gregorius M.: "Quis haec scripserit, valde supervacanee quaeritur, quum tamen auctor libri Spiritus Sanctus fideliter credatur. Ipse igitur haec scripsit, qui scribendo dictavit: ipse scripsit qui in illius opere inspirator extitit."[2]

Consequitur, ut qui in locis authenticis Librorum sacrorum quidpiam falsi contineri posse existiment, ii profecto aut catholicam divinae inspirationis notionem pervertant, aut Deum ipsum erroris faciant auctorem. Atque adeo Patribus omnibus et Doctoribus persuasissimum fuit, divinas Litteras, quales ab hagiographis editae sunt, ab omni omnino errore esse immunes, ut propterea non pauca illa, quae contrarii aliquid vel dissimile viderentur afferre (eademque fere sunt quae nomine novae scientiae nunc obiiciunt), non subtiliter minus quam religiose componere inter se conciliare studuerint; professi unanimes, Libros eos et integros et per partes a divino aeque esse afflatu, Deumque ipsum per sacros auctores elocutum nihil admodum a veritate alienum ponere potuisse.

Ea valeant universe quae idem Augustinus ad Hieronymum scripsit: "Ego enim fateor caritati tuae, solis eis Scripturarum libris qui iam canonici appellantur, didici hunc timorem honoremque deferre; ut nullum eorum auctorum scribendo aliquid errasse firmissime credam. Ac si aliquid in eis offendero litteris quod videatur contrarium veritati, nihil aliud quam mendosum esse codicem, vel interpretem non assecutum esse quod dictum est, vel me minime intellexisse non ambigam."[3]

[1] *De consensu Evangel.*, l. I, c. 35.
[2] *Praef. in Job*, n. 2.
[3] *Ep.* LXXXII, 1, *et crebrius alibi.*

APPENDIX II

DECREES OF THE PONTIFICAL COMMISSION FOR BIBLICAL STUDIES

I.—Decree of 13th February, 1905, on "Implicit Quotations contained in the Sacred Writings."[1]

CUM ad normam directivam habendam pro studiosis S. Scripturae proposita fuerit Commissioni Pontificae de re biblica sequens quaestio, vid.:

"Utrum ad enodandas difficultates quae occurrunt in nonnullis S. Scripturae textibus, qui facta historica referre videntur, liceat Exegetae Catholico asserere agi in his de citatione tacita vel implicita documenti ab auctore non inspirato conscripti, cujus adserta omnia auctor inspiratus minime adprobare aut sua facere intendit, quaeque ideo ab errore immunia haberi non possunt?"

Praedicta Commissio respondendum censuit:

"*Negative*, excepto casu in quo, salvis sensu ac judicio Ecclesiae, solidis argumentis probetur: 1° Hagiographum alterius dicta vel documenta revera citare; et 2° eadem nec probare nec sua facere, ita ut jure censeatur non proprio nomine loqui."

Die autem 13ª Februarii an. 1905, Sanctissimus, referente me infrascripto Consultore ab Actis, praedictum Responsum adprobavit atque publici juris fieri mandavit.

Fr. David Fleming, O.F.M.,
Consultor ab actis.

[1] *Revue Biblique*, Nouvelle série, t. ii, p. 161.

II.—Decree of 23rd June, 1905, concerning Narratives which have only the Appearance of History.[1]

De narrationibus specietenus tantum historicis in S. Scripturae Libris qui pro historicis habentur.

Proposito sequenti dubio Consilium Pontificium pro studiis de re biblica provehendis respondendum censuit prout sequitur:

Dubium

"Utrum admitti possit tanquam principium rectae exegeseos sententia quae tenet S. Scripturae Libros, qui pro historicis habentur, sive totaliter, sive ex parte, non historiam proprie dictam et objective veram quandoque narrare, sed speciem tantum historiae prae[2] se ferre ad aliquid significandum a proprie litterali seu historica verborum significatione alienum?"

"Resp. *Negative*, excepto tamen casu, non facile nec temere admittendo, in quo, Ecclesiae sensu non refragante, ejusque salvo judicio, solidis argumentis probetur Hagiographum voluisse non veram et proprie dictam historiam tradere, sed, sub specie et forma historiae, parabolam, allegoriam, vel sensum aliquem a proprie litterali seu historica verborum significatione remotum proponere."

Die autem 23ª Junii a. c. in Audientia ambobus R^mis Consultoribus ab Actis benigne Concessa, Sanctissimus praedictum "Responsum" ratum habuit ac publici juris fieri mandavit.

Fr. David Fleming,
Consultor ab actis.

[1] *Revue Biblique*, Nouvelle série, t. ii, p. 321.

[2] The text of the *Revue Biblique* has "pro se ferre." In spite of the semi-official nature of this text, we have considered it allowable to correct this manifest printer's error, as indeed is generally done.

III.—Decree of the 27th June, 1906, concerning the Mosaic Authorship of the Pentateuch.[1]

De Mosaica authentia Pentateuchi.

Propositis sequentibus dubiis Consilium Pontificium pro studiis de re biblica provehendis respondendum censuit prout sequitur:

I. Utrum argumenta a criticis congesta ad impugnandam authentiam Mosaicam sacrorum Librorum, qui Pentateuchi nomine designatur, tanti sint ponderis, ut posthabitis quampluribus testimoniis utriusque Testamenti collective sumptis, perpetua consensione populi Iudaici, Ecclesiae quoque constanti traditione nec non indiciis internis quae ex ipso textu eruuntur, ius tribuant affirmandi hos libros non Moysen habere auctorem, sed ex fontibus maxima ex parte aetate Mosaica posterioribus esse confectos?

Resp. *Negative.*

II. Utrum Mosaica authentia Pentateuchi talem necessario postulet redactionem totius operis, ut prorsus tenendum sit Moysen omnia et singula manu sua scripsisse vel amanuensibus dictasse; an etiam eorum hypothesis permitti possit qui existimant eum opus ipsum a se sub divinae inspirationis afflatu conceptum alteri vel pluribus scribendum commisisse, ita tamen ut sensa sua fideliter redderent, nihil contra suam voluntatem scriberent, nihil omitterent; ac tandem opus hac ratione confectum, ab eodem Moyse principe inspiratoque auctore probatum, ipsiusmet nomine vulgaretur?

Resp. *Negative ad primam partem, affirmative ad secundam.*

III. Utrum absque praeiudicio Mosaicae authentiae Pentateuchi concedi possit Moysen ad suum conficiendum opus fontes adhibuisse, scripta videlicet documenta vel orales traditiones, ex quibus, secundum peculiarem scopum sibi propositum et sub divinae inspirationis afflatu, nonnulla

[1] *Revue Biblique*, Nouvelle série, t. iii, p. 349.

hauserit eaque ad verbum vel quoad sententiam, contracta vel amplificata, ipsi operi inseruerit ?

Resp. *Affirmative.*

IV. Utrum, salva substantialiter Mosaica authentia et integritate Pentateuchi, admitti possit tam longo saeculorum decursu nonnullas ei modificationes obvenisse, uti: apposita, vel glossas et explicationes textui interiectas; vocabula quaedam et formas e sermone antiquato in sermonem recentiorem translatas; mendosas demum lectiones vitio amanuensium adscribendas, de quibus fas sit ad normas artis criticae disquirere et iudicare ?

Resp. *Affirmative,* salvo Ecclesiae iudicio.

Die autem 27 Iunii an. 1906, in Audientia R^mis^ Consultoribus ab Actis benigne concessa, Sanctissimus praedicta Responsa adprobavit ac publici iuris fieri mandavit.

Fulcranus G. Vigouroux, P.S.S.,
Laurentius Janssens, O.S.B.,
Consultores ab actis.

IV.—Decree of 30th June, 1909, concerning the Historical Character of the First Three Chapters of Genesis.

De Charactere historico trium priorum capitum Geneseos.

I. Utrum varia systemata exegetica, quae ad excludendum sensum litteralem historicum trium priorum capitum libri Geneseos excogitata et scientiae fuco propugnata sunt, solido fundamento fulciantur ?

Resp. *Negative.*

II. Utrum, non obstantibus indole et forma historica libri Geneseos, peculiari trium priorum capitum inter se et cum sequentibus capitibus nexu, multiplici testimonio Scripturarum tum veteris tum novi Testamenti, unanimi fere sanctorum Patrum sententia ac traditionali sensu, quem, ab israëlitico etiam populo transmissum, semper tenuit Ecclesia, doceri

possit, praedicta tria capita Geneseos continere non rerum vere gestarum narrationes, quae scilicet obiectivae realitati et historicae veritati respondeant; sed vel fabulosa ex veterum populorum mythologiis et cosmogoniis deprompta et ab auctore sacro, expurgato quovis polytheismi errore, doctrinae monotheisticae accomodata; vel allegorias et symbola, fundamento obiectivae realitatis destituta, sub historiae specie ad religiosas et philosophicas veritates inculcandas proposita; vel tandem legendas ex parte historicas et ex parte fictitias ad animorum instructionem et aedificationem libere compositas ?

RESP. *Negative* ad utramque partem.

III. Utrum speciatim sensus litteralis historicus vocari in dubium possit, ubi agitur de factis in eisdem capitibus enarratis, quae christianae religionis fundamenta attingunt: uti sunt, inter caetera, rerum universarum creatio a Deo facta in initio temporis; peculiaris creatio hominis; formatio primae mulieris ex primo homine; generis humani unitas; originalis protoparentum felicitas in statu iustitiae, integritatis et immortalitatis; praeceptum a Deo homini datum ad eius obedientiam probandam; divini praecepti, diabolo sub serpentis specie suasore, transgressio; protoparentum deiectio ab illo primaevo innocentiae statu; nec non Reparatoris futuri promissio ?

RESP. *Negative.*

IV. Utrum in interpretandis illis horum capitum locis, quos Patres et Doctores diverso modo intellexerunt, quin certi quippiam definitique tradiderint, liceat, salvo Ecclesiae iudicio servataque fidei analogia, eam quam quisque prudenter probaverit, sequi tuerique sententiam ?

RESP. *Affirmative.*

V. Utrum omnia ac singula, verba videlicet et phrases, quae in praedictis capitibus occurrunt, semper et necessario accipienda sint sensu proprio, ita ut ab eo discedere nunquam liceat, etiam cum locutiones ipsae manifesto appareant improprie, seu metaphorice vel anthropomorphice, usurpatae,

et sensum proprium vel ratio tenere prohibeat vel necessitas cogat dimittere ?

RESP. *Negative.*

VI. Utrum, praesupposito litterali et historico sensu, nonnullorum locorum eorumdem capitum interpretatio allegorica et prophetica, praefulgente sanctorum Patrum et Ecclesiae ipsius exemplo, adhiberi sapienter et utiliter possit ?

RESP. *Affirmative.*

VII. Utrum, cum in conscribendo primo Geneseos capite non fuerit sacri auctoris mens intimam adspectabilium rerum constitutionem ordinemque creationis completum scientifico more docere; sed potius suae genti tradere notitiam popularem, prout communis sermo per ea ferebat tempora, sensibus et captui hominum accommodatam, sit in horum interpretatione adamussim semperque investiganda scientifici sermonis proprietas ?

RESP. *Negative.*

VIII. Utrum in illa sex dierum denominatione atque distinctione, de quibus in Geneseos capite primo, sumi possit vox *Yôm* (dies), sive sensu proprio pro die naturali, sive sensu improprio pro quodam temporis spatio, deque huiusmodi quaestione libere inter exegetas disceptare liceat ?

RESP. *Affirmative.*

Die autem 30 Iunii anni 1909, in audientia ambobus R^mis Consultoribus ab actis benigne concessa, Sanctissimus praedicta responsa rata habuit ac publici iuris fieri mandavit.

FULCRANUS VIGOUROUX, P.S.S.,
LAURENTIUS JANSSENS, O.S.B.

ROMAE, *die* 30 *Iunii*, 1909.

APPENDIX III

WE have said on pp. 46 and 86 that St. Augustine thought he was able to base his theory of the origin of all living beings by absolute natural evolution on texts of Holy Scripture, but that it is generally agreed to-day that his exegetical arguments are not conclusive. We should have liked to develop these two points at greater length in the text, but that would have made the conference too long. In order to fill up the gap, we give here in the form of an appendix the details omitted in the body of the book.

I.—Exegetical Arguments of St. Augustine.

Let us recall first of all that St. Augustine always considered as beyond doubt that the account of the creation according to the order of the Six Days has only the appearance of history—that is to say, the chronological element in the narrative of the first chapter of Genesis, expressed by the succession of the Six Days, is purely figurative. We set forth some of the arguments of the great Doctor towards the end of our First Conference. Others are based upon the impossibility of admitting that the facts which appear to be stated could really have come about in six days of twenty-four hours; and these arguments are equally convincing, since, as we have pointed out, the Hebrew word יוֹם (*day*), when signifying a period of time, cannot as a matter of fact mean other than a period of twenty-four hours.

On this point St. Augustine was in agreement with the Fathers of the School of Alexandria, and he was also at one with them in maintaining that the Six Days of Genesis represent simply the very beginning of time—that is to say, the mathematical instant when God created matter from nothing. But while the Alexandrine Fathers held that from that moment the organic as well as the inorganic worlds were essentially the

same as they are to-day, St. Augustine abandoned this opinion in the case of the organic world, and held that at the beginning of things God created living beings only in their causes. The terrestrial or aquatic matter which He created at the beginning virtually contained all living beings just as a seed contains a plant virtually, and it was only later, as time went on, that the different organised beings, including the human body, appeared, or, to use his own expression, " came forth from their causes " by a natural evolution of inorganic matter.

St. Augustine had first of all held the Alexandrine theory in its entirety, and in doing so he based himself on the same arguments as the Alexandrine Fathers, arguments which we have outlined on p. 70. But after studying the sacred text more closely, St. Augustine realised that there were things included in the narrative of the first chapter of Genesis which could only have come about in the course of time. Such are the movements of the stars, the birth and growth of plants up to the production of the seeds and fruit, the growth of birds previous to the time when they are able to fly, etc. But the first chapter of Genesis mentions all these things. If, then, as St. Augustine thinks, the Six Days represent in reality only the mathematical instant of creation, in this first chapter there is question only of the virtual formation of the world as we know it, and in particular of the virtual formation of animals and vegetables—that is to say, the earth and sea as they were created by God had the power of bringing forth vegetables and the various kinds of animals, aquatic, aerial, and terrestrial.

Now after this creation which is described under the form of Six Days, but which really took place in an instant, " God had completed His work, and He rested from all the work which He had made " (Gen. ii, 2, 3). He rests, although He continues to work, as our Saviour Himself said when the Jews sought to pick a quarrel with Him concerning the repose of the Sabbath (John v, 17). But this continuous work of God cannot be the same in nature as that which is referred to in the narrative of the Hexameron; otherwise it would be untrue

to say that He had finished His work after these Six Days, that is, in point of fact, after the instant of creation. Accordingly, the continued work can only mean the government of the world (that is, the conservation of things by God, and His concursus with secondary causes). Hence, there has been no other intervention since the moment when God created the world. God therefore has not made any species which was not virtually contained in the inorganic world as He had created it at the beginning, and this applies to the body of man[1] as well as to the other living beings.

St. Augustine finds a confirmation of this conclusion, resulting from his study of the Hexameron, in the second chapter of Genesis.

In the first place, as we have seen, St. Augustine had noticed that there is an evident contradiction between the narratives of the first and second chapters if we take both literally. Moreover, the text of chapter i contradicts itself if we do not regard the chronological element as figurative. It is quite otherwise with chapter ii. God speaks here, it is true, but He speaks in order to be understood by Adam, and this could only take place in time. The acts of Adam, the command which he receives, his sleep, and the words which he pronounces at his awakening upon seeing Eve who has just come forth from him, are things which could only take place in time, and could not even be realised virtually at the first creation of the world.

From this one must conclude that while the first chapter deals with the formation of the world in its causes at the very moment of creation, the second, on the contrary, narrates how the world as we know it has come forth from its causes by developing in the course of time. The second chapter tells us in the first place what was the state of the earth in the day,

[1] As to the soul of the first man, St. Augustine, faithful to his principle concerning God's repose, holds also that it was created at the first instant of time. Later on, when the body had reached by natural evolution a suitable state of organisation, the soul united itself to the body by a kind of natural inclination.

that is to say, at the instant, when God created heaven and earth: *terra firma* existed, but there were no plants, and animals were equally lacking, since it was only later on that God caused all the terrestrial animals and the flying creatures of the air to come forth from the earth.

This conclusion was, moreover, confirmed in St. Augustine's opinion, in the case of the vegetables, by verse 5 of chapter ii. St. Augustine was only acquainted with the LXX version and the Latin translations of this. Now these versions—including our Vulgate—say that on the day when God created heaven and earth, He also created all the plants of the field before they existed in the earth, and all the herbs of the fields before they had germinated,[1] which certainly seems to indicate a purely virtual production. But it is recognised to-day that these versions are inaccurate, since the Hebrew word טֶרֶם signifies not "before" but "not yet." The meaning is, therefore, this: "In the day when Jahveh Elohim made heaven and earth, no bushes (or trees)[2] of the plains yet existed on the earth, and no grass of the plains had as yet germinated." One might perhaps be able still to understand the passage in the sense of St. Augustine if one united it to what imme-

[1] It will be not without its interest to give here verses 4 and 5 of chapter ii of Genesis according to the LXX, the Latin version used by St. Augustine, and the Vulgate version.

LXX version: Αὕτη ἡ Βίβλος γενέσεως οὐρανοῦ καὶ γῆς, ὅτε ἐγένετο, ᾗ ἡμέρᾳ ἐποίησε κύριος ὁ θεὸς τὸν οὐρανὸν καὶ τὴν γῆν, καὶ πᾶν χλωρὸν ἀργοῦ πρὸ τοῦ γενέσθαι ἐπὶ τῆς γῆς, καὶ πάντα χόρτον ἀγροῦ πρὸ τοῦ ἀνατεῖλαι.

Version used by St. Augustine: "Hic est liber creaturae coeli et terrae; cum factus est dies, fecit Deus coelum et terram, et omne viride agri, antequam esset super terram, et omne foenum agri, antequam exortum est."

Vulgate: "Istae sunt generationes coeli et terrae, quando creata sunt, in die quo fecit Dominus Deus coelum et terram: et omne virgultum agri antequam oriretur in terra, omnemque herbam regionis priusquam germinaret."

[2] The term שִׂיחַ seems to have also the meaning of tree. Cf. Gen. xxi, 15; Job xxx, 4. The text accordingly refers generally to herbaceous and woody vegetable organisms.

diately precedes: "Such are the generations of heaven and earth when they were created, in the day," etc. But it is generally held nowadays that the words "in the day" begin the Jahvist narrative, an account which is independent of the Hexameron, and that the latter ends at "when they were created." If we accept this theory, the text can no longer be invoked directly in favour of the absolute evolution of living beings.

Nevertheless, this passage understood as it ought to be according to the Hebrew gives us to understand, even more clearly than the inaccurate translations, that at the moment referred to in the beginning of the narrative which we call Jahvist the earth existed, but without plants or animals. And since in this narrative there is no question of the appearance of light, the firmament, the stars, nor of the separation of land and sea, while it does describe the appearance of plants and animals, it would seem that the light, firmament, and stars, as well as the sea and dry land, had appeared right from the beginning. This correction of the text accordingly does not upset St. Augustine's conclusion that the inorganic world existed actually as it is to-day right from the first moment of creation—at least so far as its main outlines are concerned; while the organic world did not then exist actually, but was only virtually contained in the inorganic world, inasmuch as the latter had the power of giving birth to plants and animals.

The same applies to those features of the inorganic world which could not be realised except in the course of time, such as the movements of the stars and of the sea. And this is what the second chapter teaches us when it says that "God had not yet rained upon the earth," and when it afterwards tells how the irrigation of the earth was brought about in the first period of the world's history.

Such is, in brief, the reasoning by which St. Augustine endeavours to base his theory of the absolute evolution of the organic world upon Holy Scripture. We shall now proceed to show why this reasoning can no longer be regarded as conclusive.

II. Criticism of St. Augustine's Reasoning.

In the matter of the arguments drawn from chapter ii of Genesis, we shall have occasion to show in later conferences that the Jahvist narrative, while historical, is nevertheless rich in figures of speech, and that the chronological succession therein contained is also figurative in part, and has as its object the inculcation of certain truths, historical indeed in our opinion, but at the same time dogmatic. Still, it is correct to say that the true history which the author narrates in this figurative language could only take place in the course of time. We know, on the other hand, from Geology that the appearance of animals and vegetables, especially of fruit-bearing trees and the fauna of to-day (which the author has alone in mind in this narrative), together with the appearance of man, do not date from the first moment of creation.

But the same would have to be said of the dry land, at least as contained in its actual boundaries, and very probably also of the terrestrial globe and the stars. We must accordingly ascribe to the figurative elements of the Jahvist narrative the state of the earth as it is described " on the day when Jahveh Elohim made heaven and earth." From this it follows that if the first chapter of Genesis really relates to the first moment of creation as St. Augustine holds, it will be necessary to admit that the primitive matter contained our inorganic world only virtually and not actually, just as in the case of the organic world. This was the view of St. Gregory of Nyssa. We think, moreover, that St. Augustine would not have had any difficulty in accepting this conclusion if he had been aware of the scientific reasons which lead us to do so to-day.

But this correction does not in any way weaken the force of the exegetical argument by which St. Augustine endeavours to establish his theory of absolute evolution; it simply enables us to extend it also to the evolution of the inorganic world. If the argument which St. Augustine bases upon God's repose is valid, we must then regard the theory of the absolute evolution of organic species as taught by the Holy Spirit,

or at least as following rigorously and immediately from this Divine teaching. This conclusion would be so serious that it is only right not to accept it even from so great a Doctor, without a careful examination.

The argument if put into form can be stated as follows:

" The Six Days of the Hexameron represent the mathematical instant at the beginning of time when God in creating corporeal matter produced formally or virtually all the works enumerated in the sacred narrative, including all animal and vegetable forms.

" Now the sacred text affirms that after these Six Days God, having finished His work, rested from all His labours.

" Therefore, after the mathematical instant at the beginning of time, God intervened no more to produce an animal or vegetable form not virtually contained in corporeal matter as created at this mathematical instant. In other words, the animal and vegetable forms which have appeared in the course of time were contained virtually in primitive matter and have arisen by the natural evolution of this matter, with the ordinary concourse of Providence, and without any special intervention on the part of God."

I do not think that the argument is open to objection from the point of view of formal logic. It remains, then, to see if the premisses are rigorously established.

We can oppose to the major that the principal argument upon which St. Augustine relies is an inaccurate interpretation of the text of Ecclesiasticus: Ὁ ζῶν εἰς τὸν αἰῶνα ἔκτισε τὰ πάντα κοινῇ (Ecclus. xviii, 1).

It might, indeed, be urged that Philo and the Greek Fathers were just as capable of understanding the Greek of the LXX as modern scholars, and that St. Jerome, who was certainly not actuated therein by an *esprit de système*, translated the text by " *Qui vivit in aeternum creavit omnia simul*," which, whatever one may say, can only signify a simultaneous creation. But to this we could reply that this objection can only vindicate a probability, and therefore the argument based on the text of Ecclesiasticus could not be regarded as rigorously demon-

strative. Moreover, even if we translate κοινῆ by "simultaneously," we could still take the term "all things" in a wide sense, as indeed the Fathers of the Fourth Lateran Council seem to have done when they professed that God made "simultaneously at the commencement of time the two kinds of creatures—namely, angelical and corporeal."[1]

Accordingly, it does not seem that we can consider the thesis that the Six Days of the Hexameron represent simply the first instant of creation, as established by the text in Ecclesiasticus. But if not, what could they represent? We have proved with St. Augustine that they cannot signify six successive periods during each of which would have appeared the corresponding works. Neither can it be maintained that God created these works virtually by successive interventions: the intervention by which he would have virtually created the light of day and the distinction between day and night could not precede that by which he virtually created the sun; the intervention by which he would have virtually created the firmament would reduce itself to nothing, and so on.

There is, however, in our opinion, a way of giving a meaning to the Six Days of the Hexameron by which we can keep in the path traced out by St. Augustine without affirming that these six days represent the first moment of creation. We refer to the idea that these six days are figurative, and do not historically represent either a mathematical instant or six successive periods of time. And if we understand the matter in this way, it seems logical to say the same of the Seventh Day. In other words, the succession of days of the Divine week, including the seventh, has no historical meaning. Now if we accept this hypothesis (and it is after all only a very natural extension to the seventh of the system of interpretation which

[1] "Creator omnium visibilium et invisibilium spiritualium et corporalium: qui sua omnipotenti virtute *simul ab initio temporis* utramque de nihilo condidit creaturam, spiritualem ac corporalem, angelicam videlicet et mundanam: ac deinde humanam, quasi communem ex spiritu et corpore constitutam" (*Conc. Lat.* IV, cap. Firmiter).

we have borrowed from St. Augustine for the first six days), St. Augustine's argument in favour of absolute natural evolution ceases to be demonstrative, since this hypothesis upsets the minor of the argument. For it would no longer be correct to say that the sacred text affirms, as a matter of history, that after the Six Days God, having finished His work, rested from all His labours. For, although this proposition is found materially in the sacred text, it would not in this case be affirmed as a matter of history any more than our Lord affirmed as a historic fact that Dives when in hell had charitable sentiments towards those still on earth.

We wish to draw attention to the fact that the interpretation which we outline above is the only way of escape from the reasoning of St. Augustine. It follows that any weakening of the hypothesis that the chronological element in the Hexameron is purely figurative would, unless it should be incompatible with the sacred text or with good sense, perforce lead us to hold, as St. Augustine did, that the theory of the absolute natural evolution of living beings is a necessary deduction from the infallible teaching of Holy Writ.

We do not, indeed, affirm that St. Augustine's exegesis, which puts the Seventh Day in a place by itself, is certainly faulty. But if it is doubtful, that alone prevents the theory of natural evolution from being insisted upon in the name of Holy Scripture.

We must point out in conclusion that one could not, indeed, reject this exegesis *a priori* as opposed to the Augustinian principle canonised by Leo XIII: " The Holy Spirit, who spoke by the sacred authors, did not wish to teach men these things (namely, the inner constitution of visible things), the knowledge of which is in no way useful for salvation." The principle that God manifests His attributes best by acting in the world through the activity of secondary causes is not a simple truth of natural history, but a theological principle which it would be at least temerarious to call in question. There is, accordingly, no reason why God should not have taught in Holy Scripture the principle of the natural evolution

of the world, which is only a particular case of God's acting by the play of secondary causes, an activity of which Holy Scripture gives us many examples, especially in the history of mankind and of the foundation of the Church.

Let us add, as we have hinted in the text, that even if we come to the conclusion, as we are inclined to do, that the first chapters of Genesis cannot serve as a basis for the theory of absolute natural evolution, we should still be obliged to attach great weight to what St. Augustine writes on this subject in his commentaries on Genesis. For we could not deny, without going against the opinion of the whole Catholic tradition, that St. Augustine, in the course of his pious and wise meditations on the first chapters of Genesis, attained to the knowledge of profound truths by the grace of God. Such is, for instance, his theory concerning the twofold knowledge of Angels. We may question whether it is contained in the narrative of Genesis—at least if we take this in its literal sense[1]—but we cannot doubt the theory itself. In the same way, these meditations did without doubt help the great Doctor to understand the grandeur and religious importance of the principle of God's acting in the world by secondary causes, and he has transmitted his conviction on this subject to all succeeding generations of Christians. But since the action of grace in the course of meditation upon Holy Scripture is not revelation—at least as a general rule—it follows that even in the case of the greatest Saints one may find inexactitudes and even errors mixed up with the truths which are discovered in the course of these meditations. For our part, we are convinced that God gave a great grace to humanity and to the Church in leading the greatest of the Doctors to develop the wonderful account of the principle of natural evolution which we find in his commentaries on Genesis. But it does not at all follow that the conclusions of St. Augustine must be

[1] St. Thomas Aquinas (*II Sent.*, q. xii, a. 3) is careful to make this reservation: he questions whether the interpretation of St. Augustine corresponds to the literal sense of Genesis, but adds: "aliter enim esset expositio mystica et non litteralis."

accepted as dogmas of faith, or that we may not legitimately modify them in the measure in which this seems to be called for by the data of the sciences. The Doctors of the Middle Ages did this, and we are doing the same in hesitating to accept absolute natural evolution. Still, we confess that it is not without some scruple that we separate ourselves on this point from the teaching of St. Augustine and St. Gregory of Nyssa, and, we may add, the common opinion of the Fathers, at least up to the eighth century and probably to the end of the twelfth. And so we hope with all our hearts that some day someone will discover a means of reconciling the data of science with the unmodified theory of these great geniuses.

APPENDIX IV

EVOLUTION OF IDEAS IN THE THIRTEENTH CENTURY UNDER THE INFLUENCE OF ARISTOTLE'S PHYSICS

WE said on p. 88 that if the Scholastic Doctors departed from the doctrine of absolute natural evolution by admitting special Divine interventions at the origin of certain living beings, they were led to do so by motives of a scientific character. We have also shown sufficiently in the context that these motives were suggested by the theories of Aristotle. It will perhaps be useful to give here some details concerning this transformation of ideas which took place during the thirteenth century.

As everyone knows, the works of Aristotle, spread abroad in the West, above all by the Arabs, aroused a great and legitimate admiration in the Christian Schools. Of course not everything could be allowed: there are in Aristotle errors incompatible with revealed doctrine and with sound reason. But after correcting these mistakes of a religious nature, there remains a mass of material so well arranged, and based upon an inductive method so correct in form, that the Western mind, devoted to the positive, was sure to be attracted to it. Unfortunately, in addition to mistakes of a doctrinal nature, the theories of Aristotle also contain errors of a scientific character (using "scientific" in the modern sense of the term). The Doctors of the thirteenth century had no means of correcting these erroneous statements which were often taken on faith. Still, some of these mistaken ideas, such as the existence of spirits moving the stars, encountered a certain amount of opposition.

To come now to the theories concerning the origin of the universe, the Scholastic writers continued to condemn the error common to all Pagan philosophers concerning the eternity of

matter, although many, including St. Thomas, doubtless out of respect for the authority of Aristotle, maintained—wrongly in our opinion—that this theory cannot be conclusively disproved by pure reason. They showed themselves to be more venturous when they accepted the theory of the incorruptibility and unchangeableness of the heavens, seeing that Holy Scripture solemnly proclaims that the heavens will be destroyed (ἀπολοῦνται; Vulg.: *peribunt*); that they will grow old like a vestment (ὡς ἱμάτιον παλαιωθήσονται; Vulg.: *ut vestimentum veterascent, i.e.*, they will wear out); that God will roll or fold them up like a mantle and they will be replaced by others (ὡσεὶ περιβόλαιον ἑλίξεις αὐτούς, καὶ ἀλλαγήσονται; Vulg.: *velut amictum mutabis eos et mutabuntur*). Moreover, this is decidedly a dogmatic text of the first class, since its object is to contrast the mutability of creatures, and in particular of the heavens, with the Divine unchangeableness.[1]

As for the primary evolution of the world at its beginning, Alexander of Hales, while not rejecting the doctrine of St. Augustine, seems himself to prefer that of St. Gregory of Nyssa, which he endeavours to harmonise as far as possible with the Aristotelian theories relative to the peculiar nature of the heavens and of the stars, and their influence upon the conservation of the terrestrial globe, and upon generation and

[1] Hebr. i, 11, 12; Ps. ci (Hebr. cii). The writer of the Epistle to the Hebrews applies this text of Psalm ci to Jesus Christ in order to affirm His Divinity. The Hebrew terms used in the psalm are at least as forcible as the Greek and Latin terms. There cannot be question simply of a change *in melius* consisting in a mere cessation of the movement of the heavens, as scholastic exegetes and theologians have endeavoured to maintain. Certainly, the "new heaven" which is to replace the old at the end of the world (Apoc. xxi, 1 *seq.*) is described as more perfect than the old, but the actual heaven must first of all be worn out and used up like a vestment and be put away like an old garment in order to make room for the "new heaven." This text, which greatly puzzled the scholastics, did not, however, hinder them from accepting the theory of Aristotle, because they thought that the latter was scientifically established.

corruption (*Summ. Theol.*, II p., q. xliv, *seq.*). In this he was followed by his disciple, St. Bonaventure, who considers more *ex professo* than Alexander of Hales the efficient cause of the first organisms, and in particular of the first animals and their life principles (*II Sent.*, Dist. xv, a. 1, q. i). He affirms that the souls of animals other than man were produced in the beginning as now by the *active* power of terrestrial matter. But he seems to hesitate concerning the moment when matter received this seminal power. While he is quite definite when he says "seminalis enim ratio, sive *potentia activa ipsius materiae* est ipsi materiae concreata, non ex aliquo producta" (*l.c.*, ad 1 m), elsewhere he seems to doubt whether matter possessed this seminal power from the moment of its creation, or whether this power was not produced, or at least only reached its perfection[1] on the Fifth Day (*l.c.*, in corp. et ad 3 m). In other words, St. Bonaventure hesitates between the phraseology of St. Gregory of Nyssa and that of St. Basil. But the assertion of St. Bonaventure, like that of the early Fathers, applies to all animals, with the exception of man, whose soul is produced directly by God. The only difference which he puts between the higher animals which reproduce their kind, and the inferior animals which are generated by putrefaction, is that "divina dispositio rectissime ordinavit ut quaedam animae *producerentur ex suo primo seminario* secundum majorem actualitatem, utpote illa quae generantur per propagationem, ita quod simile ex simili; et ista sunt animalia perfectiora; quaedam vero secundum minorem, utpote illa quae generantur per putrefactionem." As for the action of the

[1] This hesitation on the part of St. Bonaventure should be considered in conjunction with his theory concerning the state of terrestrial matter at the moment of creation. Matter was not then deprived of a substantial form, but it had a very incomplete form which gave it *appetitum et inclinationem* for the reception of the different forms with which the Divine power was to endow it later on (*l.c.*, Dist. xii, a. 1, q. iii). There was, then, in matter at least, a natural exigency for the production of the complete seminal power. And a natural exigency of this kind suffices in order to exclude what is called a special Divine intervention.

heavenly bodies, St. Bonaventure admits their intervention, but this is confined to exciting and assisting the active power which existed in a latent state in the earth. The *ratio prima* of the production of animals and of each particular species of animal, including those produced by putrefaction, must not be looked for in the heavens, nor in that which moves the heavens, but in Him who implanted in matter these seminal powers. For Nature could never give existence to any form unless God had implanted in it the power of doing so. Hence it is not necessary that the cause which thus transforms matter should be more perfect than the form produced: "*et ideo non oportet quod educens illam formam in actum sit nobilius illa forma educta.*"[1]

From this we see that the doctrine of the early Fathers was preserved up to this time—at least so far as its essential points are concerned—within the Franciscan School.

But already before St. Bonaventure, the illustrious founder of the Dominican School, Albert the Great, had maintained the distinction which we find again in his pupil St. Thomas Aquinas, between the origin of the higher organisms and that of the lower ones.

Albert the Great is in favour of the doctrine of St. Augustine concerning the figurative meaning of the succession of works in the Hexameron.[2] Still, as other Fathers have held the

[1] The attention of the reader is called to the fact that this principle is identical with that which we ourselves develop towards the end of our Second Conference (Fourth Proposition, B), and which enables us to answer the objection which the Creationists endeavour to base upon the principle of causality, against the theory of the natural evolution of living beings.

[2] In his *Summa de Creaturis* (t. iv, q. lxxii, a. 1), Albert the Great says: "Sine prejudicio sententiae melioris, videtur Augustino consentiendum." *In II Sent.*, Dist. xii, a. 1, he says: "Sine praejudicio loquendo, nihil videtur mihi verius quam id quod Augustinus dicit." In his *Summa Theologica* he is less categorical: after declaring (II p., t. xi, q. xliv) that the two opinions are both Catholic, he contents himself by adding (*ibid.*, q. xlvi): "mihi magis videtur quod in uno indivisibili nunc omnia facta sint." The reason which he here gives for this is that it is more in harmony with the mani-

opposite view, he will answer also for them, but in so doing he will as a general principle look at the matter from the point of view of the natural evolution of the world. The things which have appeared successively, he says, were made simultaneously in substance, before appearing according to their species; but they had to appear successively, in order that the things which were to cause others should precede these in time (*II Sent.*, Dist. xii, a. 1, ad 1 m, *ex rat. comm.*). Let us note that when the appearance of living beings is in question, there is no longer room to distinguish between the opinion of St. Augustine and that of the "other Fathers," since the two views agree in recognising that living beings have appeared successively and as the effect of natural causes. Also it would seem that the principle enunciated above should apply absolutely and in every hypothesis. But here come in the Aristotelian theories. For the production of plants, the movement of the stars and the *virtus sementiva* contained in terrestrial matter suffice (*l.c.*, Dist. xiv, a. 9; cf. *Summa de Creaturis*, tract. iv, q. lxxi, a. 2, ad 4 m). But for more complex animals, such as man, the horse, and the donkey, although certain philosophers[1] maintain the contrary, the best ones say that these causes are insufficient. In his *Summa Theologica* (written after the *Summa Theologica* of St. Thomas Aquinas) Albert the Great treats more *ex professo* the origin of animals. In the case of the lower animals, putrefying matter contains a sufficient seminal principle, and the radiation of the stars suffices as active cause, as is maintained by the philosophers, Aristotle, Avicenna, and the Astronomers. But it is otherwise in the case of the perfect animals—*i.e.*, those which "perfectos habent sensus et vires animales," such as the

festation of the Creator's power. In the French edition I adopted an erroneous chronology of the works of Albert the Great. I have taken this opportunity of correcting it, and of developing the whole subject in greater detail.

[1] It must be borne in mind that philosophy as understood by the ancients comprised what we nowadays call the "natural sciences."

animals which walk about. For these the earth is only the material principle, and the heavens act only as a dispositive cause. The same holds good for the more perfect of the aquatic animals, which " in tanta quantitate molis et virtutis a principiis sive qualitatibus elementorum et virtute coeli secundum primas hypostases suae speciei fieri non poterant, nisi virtute creatoris." The insufficiency of the heavens for the production of terrestrial animals is shown in the fact that " solá animalia terrae formata sunt cum anima, quae est principium vitae manifestae per motum et sensum."

St. Thomas Aquinas followed the opinion of his master as far as the facts were concerned. But the *a priori* arguments by which the latter endeavoured to account for these facts could not satisfy him. The lower animals have a sensitive life-principle or soul, as well as the higher ones, although it is doubtless less perfect; and the soul of the higher animals (with the exception of the human soul) is " drawn out from the potentiality of matter "—that is, it is simply the result of a transformation of matter, just as is the soul of the inferior animals and plants. Indeed, this was admitted elsewhere by Albert the Great, who, it must be confessed, does not display much consistency with his principles in this matter. But in addition, the explanation which St. Thomas gives of the production of the inferior animals by the activity of the stars would be equally applicable to the higher animals. As we shall shortly see in greater detail, Albert the Great vigorously opposed the opinion of those philosophers who held that the stars are moved by intelligences (*II Sent.*, Dist. iii, a. 1 and 3; *Ibid.*, Dist. xiv, a. 6; *Summa Theol.*, II p., tract. xi, q. liii, membr. 3 and q. lvii, membr. 2, ad 3 m). On the other hand, St. Thomas Aquinas, convinced by the arguments of Aristotle, always formally taught the theory of the spirit-movers of the stars (*Summa Contra Gentes.*, I, II, cap. xci; *II Sent.*, Dist. xiv, q. i, a. 3; *De Pot.*, q. vi, a. 6; *De Sp. Creat.*, q. un., a. 6; *Summa Theol.*, I p., q. lxx, a. 3, *et alibi*). He declares that this theory is in no wise contrary to Catholic doctrine, provided that the spirit-movers are not looked upon as the souls

of the heavens or of the stars, and provided one admits that these spirits were all created directly by God, which is tantamount to numbering them among the Angels. This doctrine, which also had the preference of St. Bonaventure (*II Sent.*, Dist. xiv, a. 3, q. ii), was to prevail in the Schools. But St. Thomas Aquinas holds, in addition, that these guiding spirits are the principal cause of the activity of the stars, the latter playing the part of instrumental causes. This is true especially in the generation of living things by the action of the heavens (*De Pot.*, q. iii, a. 11, ad 13 m et 14 m; *Ibid.* q. vi, a. 6, ad 10 m; *De Sp. Creat.*, q. un., a. 6, ad 12 m; *Summa Theol.*, I p., q. lxx, a. 3, ad 3 m *et alibi*); the guiding spirits, which are living beings, act by means of the stars, which are material bodies, and thus fulfil all the conditions necessary to be the sufficient cause of the production of corporeal life. This theory is peculiar to St. Thomas, and it has been generally rejected, even by the strictest Thomists. But at the time when St. Thomas held it, there was no reason whatever to confine *a priori* the efficacity of this cause to plants and to relatively inferior animals. Hence he could only base this limitation upon the law which Aristotle had apparently established by an induction drawn from the sum-total of the facts then known. This was precisely the case, as we have shown above (pp. 92, 93). It must, moreover, be admitted that this *a posteriori* argument was alone convincing in the state of science at the time. For once it is admitted that the stars, whether of themselves or as instruments, were capable of producing animal life, it is not easy to see how one could define *a priori* the limits of this efficacity. But having established by experience that the stars are incapable of generating the higher animals, while they do in fact generate the lower animals, one could then recognise that in this fact there was nothing absurd *a priori*, for a cause capable of producing a less perfect thing is not necessarily thereby capable of producing one which is more perfect. This is what St. Thomas points out (*Summa Theol.*, I p., q. xci, a. 1 and 2 m) when, after stating Aristotle's law, he adds: " Manifestum est enim quod

plura requiruntur ad productionem rei perfectae quam ad productionem rei imperfectae."

In any case, it is historically certain that if the theory of absolute natural evolution was subjected to notable modifications from the time of the thirteenth century, this was for motives of a scientific nature, and not for Scriptural or dogmatic reasons. The texts from Holy Scripture hardly enter in except as objections. It is true that these texts were quoted after the Vulgate, which seems to set out in greater relief than the original text the active part played by the earth and water in the origin of living beings.

But the history of these variations leads us to a still more important conclusion—namely, that however divergent may have been the views of the great Masters of Christian thought, all were nevertheless guided by the same spirit, and that is why the study, even of their scientific errors, presents so great an interest. We notice in the first place, side by side with care to guard intact the essential points of Christian doctrine, a great deal of liberty and a spirit of mutual tolerance in discussion. Then we see the desire to found theories upon positive facts, and to learn at the feet of those masters, even if they were pagans, who had collected these facts, and who by their profound reflections on phenomena, whether of ordinary observation or of a more scientific character, had become the creators of vast philosophical syntheses. Lastly —and it is on this point that we wish above all to insist—we note the anxiety, which becomes almost scrupulous, to explain natural phenomena by the natural action of secondary causes, and of excluding, as far as possible, the immediate action of God.

It was this preoccupation which led St. Thomas and St. Bonaventure and their successors to admit the theory of the spirit-movers of the stars, after purging it from the serious errors which it derived from its pagan origin. Having recognised the impossibility of admitting in the heavenly bodies an innate tendency to the circular motion which of itself suffices to explain their movements, they found themselves in a

dilemma: they had either to admit that God moves of Himself at least the first heavenly sphere which by its movement would determine the movement of the other spheres, or else they had to allow with the pagan philosophers that the stars are moved by numerous intelligences which were secondary causes in relation to God. The great pagan philosophers thought, in fact, that the movement of the heavens could only be produced by intelligences, and they considered the varied movements of the stars to be the best proof of the existence of many deities.[1] Although inferior to the Supreme Deity, who is *absolutely* immutable and Pure Actuality, these eternal and *substantially* immutable intelligences which move the heavenly spheres are divine for Plato as for Aristotle, and the latter affirms that they are simply the gods which have been put forward to the common people in fabulous forms more suited to their imagination, and to whom is ascribed the worship decreed by the laws (*Metaph.* l. xii, c. viii). Aristotle sometimes calls these intelligences the souls of the stars, but he uses this term in an equivocal sense, for the stars, being incorruptible in his view, cannot be animated in the sense which this word has when applied to animals. Plato regards the immediate mover of a star as its soul, but St. Thomas Aquinas (*De Sp. Creat.*, q. un., a. 6) calls attention to the fact that since Plato thought that the soul of man is united to the body simply as a mover to the thing it moves, the term "soul," when used by Plato, can only mean that the stars are moved by spirits.

The Fathers discussed the question whether one could accept the theory of Plato and Aristotle, provided one attributed to the Angels the office which the pagan philosophers attributed to the gods. Origen seems to have allowed this without hesitation, but his doctrine on the Angels includes grave errors which were anathematised by the Fifth Œcumenical Council.

St. Jerome is referred to by the Scholastics as apparently

[1] Cf. Cicero, *De natura deorum*, l. I, Nos. 15-22.

holding the animation of the stars. But, besides the fact that the proposition of St. Jerome is purely hypothetical, I think that we have here simply an error in transcription,[1] for the genuine text of St. Jerome does not admit of such an interpretation. There remains St. Augustine, who showed hesitation. At the beginning of his career, in *De Genesi ad litteram, liber imperfectus* (cap. iv, num. 17), he seems to regard the world as moved by a living, spiritual creature. Later, in the *Enchiridion de fide, spe et charitate* (cap. lviii), he declares that he does not know with certitude whether the sun, moon, and all the stars form part of the society of Angels, or whether they are simply luminous bodies without sense and intelligence. In *De Genesi ad litteram*, Lib. II, cap. xviii, he puts forward three hypotheses: " Solet quaeri utrum coeli luminaria ista conspicua sola sint, an habeant rectores quosdam spiritus suos; et, si habeant, utrum ab eis etiam vitaliter inspirentur, sicut animantur carnes per animas animalium, an sola sine ulla permixtione praesentia."[2] He expresses the hope that he will be able later on to examine this question, but considers it more prudent not to come to a decision for the moment. Lastly, in the *Retractationes* (Lib. I, cap. xi), without venturing to decide absolutely on the matter, he nevertheless declares that he had not been able to find, either in reason or in the authority of the Holy Scriptures, any conclusive argument in favour of the theory of Plato and the other philosophers according to whom the world would be an animal.

It seems certain that St. Augustine's doubt was inspired by

[1] Cf. Migne, *P.L.*, XXIII, 1016, note j.

[2] This is the only text which we have been able to find in the writings of the Fathers where a distinction is made between the movement and the animation of the stars by spirits. In all other passages of the Fathers, as in the pagan writers, these two notions seem to have been regarded as synonymous. And whatever the Scholastics may have said, we may ask ourselves whether in point of fact they should not be so regarded. For it seems difficult to allow that a spiritual substance should be for ever destined by a natural law to move a body, unless it should be united to this body by a natural union like that which unites the body to the soul.

the opinion of the early Fathers and ecclesiastical writers who thought that the Angels have material bodies, aerial, fiery, or ethereal in nature. This opinion was due in part to the fear of putting the Angels on the same plane as the One True God by attributing to them a purely spiritual nature, and partly to the influence of the pagan philosophers, and certain Old Testament apocryphal writings, which many writers regarded as inspired and which singularly favoured the Platonist errors concerning the nature of the Angels and demons. This opinion was widespread in the Eastern Church up to the commencement of the fourth century, but from that time it was practically abandoned. Nevertheless, St. Augustine considers it as still at least a possible view, and sometimes even he seems to adhere to it. His sentiments seemed to have evolved during the course of his career in a direction favourable to the absolute spirituality of the Angels. Thus, in Book III of *De Genesi ad litteram* (cap. ix and x) he regards the demons as having an aerial body, as in the conception of Plato and Origen which he manifestly has in mind, and he seems not to doubt that the higher Angels also possess bodies, although of a more subtle sort of matter. Fifteen years later, in *De Civitate Dei* (Lib. XV, cap. xxiii, and Lib. XXI, cap. x), he allows, as at least plausible, the opinion according to which the demons themselves have not any kind of body.

But in the Greek Church, the reaction against the ideas of Origen had already led St. Basil (Hom. 3a in *Hexameron*) to deny categorically the animation of the stars, and the opposition to this theory became more general as the doctrine of the purely spiritual nature of the Angels took a more precise form. And the emphatic terms in which St. John Damascene condemns the animation of the heavens or of their luminaries (*Exp. fid. cath.*, Lib. II, cap. vi) seems to express very well the Catholic opinion in the eighth and following centuries.

The theory of the angelic movers of the stars was, however, to present itself once more in the thirteenth century, under the ever-growing influence of the writings of Aristotle and his commentators, and especially those of his great Arab commen-

tator Averroes. Defended with ardour by the Averroist School, it was first regarded with little favour by orthodox theologians. The great Bishop of Paris, William of Auvergne, in his treatise *De Universo*, published between 1231 and 1236, while not formally adhering to the animation of the heavens, considers, nevertheless, that there would be no danger to the Faith in conceding to Aristotle that the heavens are an animal or a collection of animals,[1] provided that one accepting the hypothesis realises that the souls of the heavenly bodies are concerned uniquely with the government of their own bodies and their movements, and that they have nothing to do with the natural government of other things (*Iae partis, IIIa pars*, cap. xxxi), and provided also that one rejects the other errors of Aristotle and his followers in this matter (*ibid.*, cap. xxix-xxx). But these souls are not Angels. The Angels have not any kind of body, even ethereal (*IIae partis, IIa pars*, cap. xxviii). They are the coadjutors of God, but only by reason of the offices which they fulfil in connection with man (*Iae partis, IIIa pars*, cap. xxxii). They do not intervene in the movements of the stars unless miraculously and at God's command, as in the case of the miracle of Joshua (*IIae partis, IIa pars*, cap. lxxxvi.) Angels do not exist for the sake of the operations of the heavens, the plants or the stars: they do not move the constellations (*ibid.*, cap. xcvi), and they do not even influence the movement of the heavens, by accelerating or moderating it. For it is clear that the Creator has given to every mobile body,

[1] Cf. *ibid.*, *IIae partis IIa pars*, cap. lxxxv. William of Auvergne does not, however, conceal the opposition which this hypothesis meets with: "Horret tamen gens illa (sc. christianorum) hoc tanquam monstrum sibi penitus ignotum et tanquam novitatem de qua ad se nihil pertinere arbitratur, stupet etiam et refugit." But he adds: "quanquam aliquis de nobilioribus et sapientibus inter doctores gentis illius ignorantiam ejus in quodam libro suo non erubuerit confiteri, et in alio etiam de hoc se dubitare dixerit" (*Iae p. IIIa. p.*, cap. xxxi). It is, then, St. Augustine's hesitation which authorises William of Auvergne to tolerate the doctrine of the animation of the heavens.

whether its movement be voluntary or purely natural in character, sufficient motive powers in order that it may realise the movements which suit and correspond to its nature (*ibid.*, cap. xcvii).

Alexander of Hales, for his part, does not allude to the question in the part of the *Summa Theologica* devoted to the study of the Angels, *Summa Theol.*[1] (II p., qq. xix-xli). But *à propos* of the work of the Fourth Day of Genesis (*ibid.*, q. lii, a. 4), he discusses the question whether the stars move of themselves, or whether they are moved either by another body or by an incorporeal agent. After rejecting the first two hypotheses, and consequently accepting the third, he recalls the fact that certain authors, in order to explain the movement of the stars, have held that they are animated and that other authors have imagined certain disembodied intelligences which determine the various movements of the heavenly bodies, different spheres being put in motion by different intelligences. He rejects the animation of the heavenly bodies, and bases himself upon the interpreters of Holy Scripture, and in particular upon St. John Damascene. Then he concludes by saying that from the diversity of movement one cannot conclude that there are as many movers as there are celestial spheres in motion; for they may receive their diverse movements from one mover, and especially *from that Mover who is not obliged to act according to material conditions* ("et maxime ab illo motore quem non est necesse agere secundum conditionem materiae"). Alexander of Hales is accordingly at least inclined to think that the movement of the heavens is produced solely by God.

To the best of our knowledge Albert the Great was the first to regard the theory of the Angel movers of the heavens as defensible, although in fact he soon abandoned it. In his *Summa de Creaturis*, published at Cologne shortly after his return from Paris (1248), this great champion of moderate Aristotelianism endeavours to show that one can, in point of fact, harmonise the statements of the philosophers who teach

[1] Alexander of Hales died in 1245, leaving his *Summa Theologica* unfinished.

that the heavens or the stars have souls, with the doctrine of the Fathers who deny that these are animated, by allowing that the Angels move the heavens by Divine command. Still, we cannot say that he formally embraces this theory, for he is careful to point out that he is speaking here according to the opinion of the philosophers, which sufficiently shows that he reserves his own judgment. He simply states that it is not contrary to the faith to allow that some Angels assist Nature by moving and governing the celestial spheres (*Summa de Creaturis*, tract. iii, q. xvi, a. 2).

But a deeper study of the intelligences moving the stars, as conceived by the Averroists, and of the traditional doctrine concerning the offices of the Angels, led Albert the Great to retract formally, in his Commentary on the Second Book of Sentences (*Dist.* xiv, a. 6) what he had written in his *Summa de Creaturis*. In this Commentary he first encounters the theory of the intelligent movers in connection with the question whether the Angels exist and whether they have a place in the order of creation (*Dist.* iii, a. 1). In favour of the existence of Angels, Albert sets out without refuting them some arguments based on principles of Catholic philosophy. They are simply arguments *ex convenientia*, which cannot be regarded as demonstrative in a matter which essentially depends upon the completely free counsel of God. Albert, indeed, seems to regard as really demonstrative only those arguments based on the superabundant testimonies in the Old and New Testaments. But if he has undertaken to treat this question here, it is, he tells us, in order to combat certain modern philosophers[1] "qui erronee sentiunt de Angelis." The arguments by which these philosophers wish to prove the existence of the Angels are, says he, ridiculous. The first does not interest us now. The second is based on the movement of the heavens, which, being incorruptible, can only be moved by separated, incorruptible substances, which certain people call Angels. Here is the text of Albert the Great's reply: "Ad

[1] Albert the Great has in mind at least primarily the Averroists.

aliud dicendum quod insania est: quia nos nunquam declinabimus in hunc errorem quod dicimus Angelos esse necessarios ad motus orbium: licet non negemus quin possint movere: sed numerus et ratio creationis non dependet ex illo." Albert the Great is careful then not to deny to pure spirits the power of moving bodies, but he cannot allow that the exercise of this motive power is one of the constituent elements of the order of Nature. As for the argument that, if the Angels were not destined to direct Nature by setting it in motion, they would not belong to the natural order, and consequently could not exist, for their ministry, with regard to the elect, would not be necessary apart from sin,[1] Albert gives us to understand in the first place, in the *sed contra* where he sets out this argument, that, if it were valid, it would really lead us to deny the existence of the Angels as revealed to us, for we cannot maintain that all the multitude of Angels has been created in order to set in motion the corporeal order of Nature. Then he replied directly: "Ad ultimum dicendum quod sunt duo ordines mundi: unum secundum statum generationis et alter secundum statum beatitudinis et gratiae: in primo statu non habet ordinem necessarium angelus, sed in secundo, quia in sortibus et gradibus eorum distinguuntur praemia gratiarum."

This way of regarding the office of the Angels harmonises better than any other with the teaching of Holy Scripture, which represents the Angels as occupied with the praise of God in heaven, and as appearing in this world only in order to exercise an office relating to the supernatural end of man. And it seems to us difficult not to understand in an exclusive sense the teaching of the Epistle to the Hebrews when it assigns as the mission of Angels the care of those who

[1] This proposition is true, provided we understand thereby the sin of the rebel angels as well as the sin of Adam. For the ministry entrusted to the angels " for the sake of those who are called to the inheritance of salvation " seems also to imply the work of preventing the demons from troubling the order of corporeal nature. And it is possible that this office would have been necessary even if Adam had not sinned.

are called to the heritage of salvation: Οὐχὶ πάντες εἰσὶν λειτουργικὰ πνεύματα εἰς διακονίαν ἀποστελλόμενα διὰ τοὺς μέλλοντας κληρονομεῖν σωτηρίαν (Heb. i. 14).

In article four of the same Distinction, Albert the Great shows that it is not possible to confound that which the "philosophers" call the "Intelligences" with the "Angels" understood in the Catholic sense of the word. He adds that a Catholic cannot admit the existence of "Intelligences" as understood by the "philosophers." And, replying to objections, he once more declares that he cannot allow that the Angels are destined for the movement of particular bodies, but they tend solely towards God by contemplation, and towards us by their ministry: "Angelos omnes separamus a materia et a determinatione ad motorem et ad motum corporis alicuius: sed intendunt in Deum tantum per contemplationem, et in nos per ministerium."

Finally, in article six of the Fourteenth Distinction, Albert the Great deals *ex professo* with the arguments urged to prove that the movers of the stars can only be spiritual substances. He once more condemns, as *error maledictus*, the doctrine of the "philosophers," and bases himself on the authority of St. John Damascene, who condemns the theory of the animation of the stars. Albert then goes on to add: "Et ideo verius dicendum puto quod non moventur nisi iussu divino et voluntate, et quod rationes supra dictae non probant nisi quod non moveantur natura quae sit forma corporis movens." Then, after recalling the fact that elsewhere he followed certain Masters of theology who wished to harmonise the opinions of the philosophers with theology by saying that the Angels serve God by moving the heavens for which reason they are known as "souls," he ends up by saying, "sed nihil ita secure dicitur, sicut quod sola Dei voluntate moveantur, et natura propria non contradicente motu."

Albert the Great, then, sees only two paths to follow: either we must grant that certain Angels have as their mission the moving of the heavens, or else we must allow that God, by His Will alone, communicates movement to the heavens,

this movement being in no wise violent, since it is not in any way contrary to their natural tendencies. The first hypothesis does not seem to him to be free from danger from the point of view of Catholic doctrine, and he accordingly resolutely embraces the second.

It was indeed otherwise with his disciple, St. Thomas Aquinas, who had followed the lectures of Albert the Great at Cologne at the time when the latter was writing the *Summa de Creaturis*. Certainly St. Thomas (*II Sent.*, Dist. xiv, q. i, a. 3) rejects as heretical the Averroist doctrine, according to which the " Intelligences " proceed one from another, for all spiritual beings are created immediately by God. But for the rest, far from abandoning the position adopted at first with some reservation by his illustrious master, St. Thomas teaches formally and constantly the theory of the spirit-movers of the stars, and he even concedes to the Averroists the distinction between the " separated movers " and the " united movers," on condition that the influence of the first upon the second consists in a simple illumination and does not confer upon them their substantial being.

St. Thomas cannot bring himself to admit that the movement of the stars is " immediate ab ipso Deo,[1] hic enim ordini divinae sapientiae non congruit cujus effectus ad ultima per media deveniunt " (*II Sent.*, Dist. xiv, q. i, a. 1). This impossibility must certainly have been very evident to St. Thomas, seeing that in the other works, where he treats of the same

[1] It must at the same time be noted that this expression " moveri immediate ab ipso Deo " is capable of two different meanings. It may express the action of God as Universal Mover, as explained in our text (p. 116), and if taken in this sense there is no doubt that we can affirm God's activity in all operations whatever they may be. But when God acts with a secondary cause, which He thus enables to share in His own activity, we say that God acts mediately by the secondary cause. The immediate action of God which St. Thomas has here in mind excludes this mediate action by a secondary cause. It is in the same sense that St. Bonaventure denies that the heavens are moved immediately by God, as he explains in terms which are remarkably precise (*II Sent.*, Dist. xiv, a. 3, q. i).

matter, he abstains from any reference to the hypothesis, allowed by Albert the Great, of the immediate action of God without the active concourse of a secondary cause.

St. Bonaventure also accepts the theory of the angelic movers of the stars for the same reason. The Seraphic Doctor commences by denying that the movement of the *primum mobile* (that is, the sphere of the fixed stars, the movement of which was supposed to cause the other heavenly movements) can have God as its unique cause. This movement being successive, a finite power or virtue suffices to produce it, and the goodness of God manifests itself by communicating to the creature all that its nature is capable of receiving. Whence we must conclude that God moves the *primum mobile* by the intermediary of a created "virtue," as in the case of the other movable bodies (*II Sent.*, Dist. xiv, q. i a. 3). Nevertheless, he continues, one could perhaps explain the matter by saying that the heaven moves itself by its own power or virtue, in this sense that it has a tendency to move itself, but this tendency being insufficient of itself, God supplements it directly Himself in order to show that He is the God of heaven and earth. St. Bonaventure does not absolutely reject this explanation; but he considers this Divine intervention as too immediate, and prefers the theory of Angel-movers, according to which God intervenes less directly (*ibid.*, q. ii).

Albert the Great was struck by this argument. Nevertheless, he maintained, up to the end of his life, his opposition to the theory of the angelic movers of the stars, in spite of the great authority which he attributed to his disciple. He continued to combat vigorously this theory in the Second Part of his *Summa Theologica* (tract. xi, q. iii, membr. 3), which he seems not to have published until after 1274—*i.e.*, after the death of St. Thomas. But he endeavoured therein to explain the movement of the heavens otherwise than by the sole action of the Divine Will. With this end in view he set forth two hypotheses.

The first reduces all the movements of the stars to the

movement of the sphere of the fixed stars, the retrograde movement of the sun and planets being accounted for by the diminution of the influence of the action of the mover, this diminution being so much greater as the star considered belongs to a less elevated sphere, and is, in consequence, more distant from the sphere of the fixed stars. After setting out this hypothesis, Albert adds: " Si quis hoc modo vult dicere, caveat ne dicat motorem primum esse Deum; quia virtus Dei esse moventis nec perficit nec deficit comparata ad immediatum sive mediatum mobile: sed est infinita ad quodlibet et immensa. Sed dicat motorem primum esse virtutem creatam a Deo, influxam primo mobili, quae virtutem motivam extendit in quodlibet mobile proportionabiliter coniunctum sibi, ut dictum est. Et haec virtus similis animae est: et propter hoc a Philosophis aliquando anima est dicta, cum tamen nec sit Angelus, nec anima nec Deus " (*Summa Theol.*, II p., tract. xi, q. liii, membr. 3).

The second hypothesis, to which Albert the Great seems to adhere, is that each sphere moves in virtue of a force which it has received from God, and which is natural to it (*ibid.*, q. lvii, membr. 2, ad 3 m).

These two hypotheses do not differ essentially from each other from the philosophical point of view. Albert the Great knew that, according to the Physics of Aristotle, which he accepted, the stars cannot move themselves by virtue of their nature alone (*quod non moveatur natura quae sit forma corporis movens*). But there is no reason why either all the heavenly spheres, or merely the first, should not have received from God at the beginning of time an accidental force[1]— that is to

[1] The term " force," restricted to the mechanical signification which is indeed its primitive meaning, signifies in the natural sense of the word any cause which of its nature tends to move locally a body of a material element. An " acquired impulsion " would belong to this category, and the ancients accordingly rightly numbered it among the forces. Later on, the physicists have found it convenient to restrict the signification of the word " force " to causes which tend to modify the state of rest or of rectilinear move-

say, an impulsion which would be the permanent cause of their movement. This impulsion would be, moreover, natural in this sense, that it is in conformity with the exigencies of their nature. For only a curvilinear impulsion, which while moving the star on its sphere would not remove it from its natural place, would not do violence to its nature. And once one admits with Aristotle that the entire natural order depends upon the movement of the stars, there would be in the very nature of the star a positive exigency[1] that God should give it this impulsion, without which it would not attain the end for which it was created. We see, then, that Albert the Great had, at the end of his career, finished by finding a solution satisfying the principle that natural phenomena ought to be explained by the action of secondary causes, without thereby excluding the Angels from the office ascribed to them by Holy Scripture and Tradition. It is perhaps regrettable, for the honour of Scholasticism, that this solution was not preferred to that of the Angel movers of the heavens. But it arrived too late. The Masters of the two great orthodox Schools thought that they could not safeguard the principle that God acts in Nature by secondary causes, otherwise than by admitting the theory of angelic movers. The tardy theory of Albert the Great was to be forgotten,[2] and the motion of the stars by

---

ment of bodies or their elements. It was doubtless useful to distinguish this kind of force from an "acquired impulsion," but it would have been preferable to invent a new word for the purpose. The abusive employment of the terms of ordinary language in a "scientific sense" essentially different from their natural sense is often calculated to lead to errors. In the present instance, it has led to a real misconception of the nature of an "acquired impulsion." We could give other examples more regrettable still. How many follies have resulted from the abusive application of the term "energy" to purely mathematical entities!

[1] See, however, the opinion of Suarez on this matter in the next note.

[2] Suarez, indeed (*Disp. Metaph.*, XXXV, sect. i) mentions this hypothesis, but apparently without suspecting that it had already been adopted by Albert the Great. He regards it as improbable,

the Angels was to meet with scarcely any opposition[1] until the time when the progress of astronomy led up to the explanation of the movement of the stars by the natural properties of matter. Little did men think at the time that in doing this

---

inasmuch as it is contrary to the suave Providence of God to produce directly of Himself effects which He could bring about by the intermediary of creatures, and because, as a matter of fact, God would be the immediate mover of the heavens, whether He moved it by a quality of the nature of an impulsion, or by His Will alone. It is, therefore, out of respect for the principle of Christian Naturalism that Suarez rejects the hypothesis accepted by Albert the Great.—For it must be admitted that the hypothesis of Albert the Great had the defect of not attributing all natural phenomena to actions having their root cause in the substantial nature of created agents, or at least called for by this nature. As Suarez points out, if (in Aristotle's theory) the movement of the heavens is necessary for the good of the universe, still it does not contribute anything to the good of the heavens themselves. The need for the movement of the heavens does not, then, result from their nature: this movement is called for simply by the universal order as willed by God. Now, in such a case, it is fitting that God should act by means of created substances.—For this reason, it must be recognised that the theory of Albert the Great was not completely satisfactory. Moreover, Albert the Great accepted it because he was obliged to do so, inasmuch as it seemed to be the only means, given the state of science at his time, of safeguarding, as far as possible, the principle of Christian Naturalism without thereby attributing to the angels a rôle in the economy of nature which was not ascribed to them by Scripture or Tradition, and which did not seem to harmonise with their purely spiritual essence.—On this point, as on many others, the theories of modern physics fit in much better than the physics of Aristotle with the principles of Christian philosophy.

[1] At the same time it is well to note that this theory, although universally held in the Schools, never went beyond the limits of philosophical speculation, and never acquired any religious character. It is worthy of remark that the Church never sanctioned any *cultus* of the angelic movers of the stars, and that beyond the general cult of the angels or of the angel guardians, she permitted the special invocation only of the three angels whose names are found in Holy Scripture, formally forbidding the invocation by name of any other, even in private devotions.

they were from the philosophical point of view only returning to the doctrine which had been altogether dominant in the Christian Schools prior to the invasion of Aristotelianism, and from which men had departed only in order to safeguard the naturalistic principle of the activity of secondary causes.

It was this same naturalistic principle which, under the influence of Aristotle's Physics, led the Scholastic Doctors to attribute to the stars a nature and activity of a higher order than that ascribed to them by the Fathers. Terrestrial agents seemed insufficient in order to explain certain phenomena, and particularly the facts then regarded as incontestable, of "spontaneous generation." The great Doctors of the thirteenth century could not bring themselves to have recourse directly to the Divine causality, and they were obliged in consequence to embrace the Aristotelian theory which attributes these phenomena to the action of the stars. The desire of excluding what he calls "the immediate action of God" in natural phenomena must indeed have been powerful in St. Thomas Aquinas, seeing that it prevented his profound and judicious mind from realising the faults of a theory which regards substances circumscribed in the genus "spirit" as the principal cause of the generation of living bodies—a theory manifestly opposed to his own principles, as the best Thomists have not failed to note.

Finally, if a more profound analysis of actual phenomena as known to them led the great Doctors of the Dominican School to admit certain special Divine interventions after the first moment of creation, but still only during the first constitution of the world, we have nevertheless seen with what care they restricted these interventions to what seemed to them absolutely necessary in view of the known laws of Nature.

When one reflects on all these things, one cannot avoid the conclusion that the great Scholastic Doctors, as well as the Fathers of the first centuries, if they had lived in our own time, would certainly have rejected as absolutely inadmissible the Creationist theories which call for numerous special Divine interventions in a universe already constituted.

If we had the leisure to extend our subject still further and to bring out here the care with which these Doctors exclude every hypothesis which would represent God as impressing upon Nature even at the beginning a violent movement, we should be able to conclude, in our opinion, that they would also have been extremely reluctant to admit even the " initial fillip " which was postulated following upon the discoveries of Newton, in order to account for the tangential component of the movement of the planets. Doubtless this " initial fillip " presents at first sight a certain analogy with the theory admitted by Albert the Great in his *Summa Theologica*. But in reality the two theories differ essentially, for the force or impulsion postulated by Albert the Great, although a perfection added to the substantial nature of the heavenly bodies, still does not imply anything which is contrary to their natural tendencies, and moreover, it is the necessary condition of those movements without which, according to Aristotelian physics, the activities of Nature could not be exercised. So far from being violent, then, this impulsion is called for by Nature. On the contrary, any impulsion given directly by the Creator to a body endowed with mass and subject to the action of natural forces would prevent it from moving as it would do under the action of these forces alone. Accordingly, unless it depended upon a Providence of a higher order, as in the case of miraculous operations, it would present itself as a violent operation and one against Nature.

For this reason, faithful to the spirit of the Fathers and of the great Doctors, we are inclined to think that all the elements of the material universe came forth from the hand of God with zero initial velocity. Clearly it would be impossible nowadays to hold that the world presented at the beginning of things the form of a homogeneous mass, as St. Gregory of Nyssa thought. We could not even imagine it as constituted by elements completely identical and arranged in a regular way. But if we suppose that the elements of the primitive cosmic matter were of more than one species and endowed with different properties (as would be the case, for instance,

with the electrons and the nuclear elements of modern physicists), and that their primitive arrangement involved in addition a certain heterogeneity, we do not see why the inorganic world, such as we know it to-day, could not have come from a cosmic matter of this kind simply by the play of the reciprocal forces of the elements themselves, without introducing any impulsion which did not result from the play of these forces in the course of time. One could then admit with the great Doctor that there does not exist in the material world any movement which does not come from the activity of artistic nature (τεχνικὴ φύσις) as God created it. The material universe would then have evolved from the beginning of time according to the plan conceived by the Divine Wisdom, solely under the action of the forces of the essentially active nature with which God endowed it. And if no scientific principle is opposed to this, we ought to suppose that this is really the case. Now, while we submit this to the judgment of authorities more competent than ourselves in the matter, it does not seem to us that such opposition exists in the case of the inorganic world.

As for the organic world, we have summed up the reasons which compel us, in the actual state of science, to introduce an exception to the rule in order to explain the origin of life. The example of great Scholastic Doctors has shown us that we may thus depart from the teaching of the Fathers without danger to orthodoxy. It must not, however, be forgotten that more than once the Scholastics erred in abandoning the teaching of the Fathers under the stress of scientific theories which they thought were indubitably established. Does not the same hold good perhaps for us also? If it be true that the hypotheses advanced in our time in order to explain the appearance of life are but sorry makeshifts and clearly unacceptable, still we may ask whether it is not possible that a day will come when Divine Providence will raise up a Newton or a Darwin in order to establish that we can and ought to accept in its entirety the principle of absolute natural evolution so plainly affirmed by the greatest of the Fathers of the Church.

APPENDIX V

ADDRESS TO THE UNIVERSITY OF CAMBRIDGE FROM THE CATHOLIC UNIVERSITY OF LOUVAIN ON THE OCCASION OF THE DARWINIAN CENTENARY

L'UNIVERSITÉ catholique de Louvain est heureuse de se joindre aux autres corps savants du monde entier, qui viennent témoigner aujourd'hui leur admiration pour l'illustre naturaliste que l'Université de Cambridge a eu le grand honneur de compter au nombre de ses élèves.

L'importance du rôle de Charles Darwin pour le triomphe des doctrines évolutionnistes est si évident, qu'il serait oiseux de s'arrêter à le faire ressortir. Il suffit de se souvenir de l'état des idées il y a cinquante ans et de l'accueil qui fut fait d'abord à "The Origin of Species" par la plupart des naturalistes et des penseurs. Sous l'influence de Georges Cuvier, la doctrine de la fixité des espèces était considérée par la plupart comme un vérité si fortement établie, que la théorie des destructions et créations successives d'Alcide d'Orbigny avait été admise presque sans opposition. Bien rares étaient ceux qui, comme notre d'Omalius d'Halloy, comprenaient combien cette théorie est indigne du Créateur. D'autre part, la doctrine de Charles Lyell était loin d'avoir conquis l'adhésion unanime des géologues. Je tiens des contemporains qu'à l'apparition de l'ouvrage de Darwin, d'Omalius lui-même, tout évolutionniste qu'il fut, considéra cet ouvrage comme péchant par excès d'"actualisme."

Cinquante ans sont révolus depuis lors, et s'il y a encore bien des divergences de vues sur l'importance rélative des trois modes de variabilité, qui, d'après Ch. Darwin, servent de point de départ et pour ainsi dire d'instrument à la sélection naturelle, je ne pense pas qu'il existe encore aujourd'hui des naturalistes qui ne soient convaincus, à la fois du fait de

l'évolution et de la nécessité de l'expliquer par les lois qui, à l'époque actuelle, régissent le monde organique.

Pour réaliser cette transformation dans les idées de ses contemporains, il fallait cette puissance d'analyse recueillant patiemment des faits innombrables pour les réunir ensuite dans une large synthèse; il fallait cette dialectique serrée qui caractérise le génie anglais; il fallait aussi cette loyauté scrupuleuse—qualité essentiellement britannique que Darwin a su réaliser à un si haut degré—qui loin de voiler les difficultés ou d'exagérer la force des arguments, tient au contraire à exposer les objections avec autant de sincérité, que si des adversaires passionnés ne pouvaient en faire état. Avoir su conserver cette mesure, malgré les attaques injustifiées dont la théorie de l'évolution fut longtemps l'objet de la part de naturalistes et aussi de théologiens insuffisamment éclairés, montre que la valeur morale de Darwin était à la hauteur de sa puissante intelligence. Aussi était-il digne, sous tous les rapports, d'être choisi pour établir cette vérité, prévue déjà par le génie d'Augustin, que Dieu, en faisant le monde, a mis en lui toutes les forces nécessaires à son épanouissement. Et il ne parait pas exagéré de dire, qu'en nous montrant la création plus grandiose encore qu'on ne l'avait soupçonné, Charles Darwin a complété l'œuvre d'Isaac Newton; car, pour tous ceux qui n'ont pas des oreilles pour ne point entendre, Darwin fut l'interprète du monde organique, comme Newton fut la voix des cieux, pour raconter la gloire du Créateur et pour proclamer que l'univers est une œuvre vraiment digne des ses mains. Et, de ces deux illustres interprètes de la nature qu'a formés votre glorieuse Université, il est permis de redire aussi avec le psalmiste:

> Ce n'est pas un langage, ce ne sont pas des paroles,
> Dont la voix ne soit point entendue;
> Leur son parcourt toute la terre,
> Leurs accents vont jusqu'aux extrémités du monde.

H. DE DORLODOT (Délégué)

INDEX

ADAPTATION to environment, 114
Albert the Great:
  on angelic movers of heavenly bodies, 157, 164-172
  on intelligence in animals, 109
  on St. John Damascene, 68, 167
  also pp. 155-7, 169, 174
Alexander of Hales, 153-4, 164
Alexandrine Fathers, 69-71, 79, 82, 100, 117, 141-2
Allegory:
  in Genesis, 14, 16, 19, 139
  in history, 13, 19
Alternating generation, 123, 125
Ambrose, St., 69
Anatomy, 104
Angelic movers of heavenly bodies:
  Albert the Great on, 157, 164-172
  Alexander of Hales, 164
  Aristotle, 160, 170
  Averroists, 163, 165, 168
  Plato, 160, 161
  St. Augustine, 161-3
  St. Basil, 162
  St. Bonaventure, 158, 168, 169
  St. Jerome, 160-1
  St. John Damascene, 162
  St. Thomas Aquinas, 157, 160, 168, 169
  Suarez, 171-2
  also pp. 152, 159
Angels:
  cultus, 172
  existence of, 165-7
  nature, 162, 163, 167
Animality, degrees of, 108, 109, 113
Apocalypse of St. John, 10
Apocrypha of O.T., 162
Archaean strata, 36
Aristotle:
  intelligence in animals, 109
  on principle of induction, 98, 152
  philosophy, 88, 96, 152
  physical theories, 68, 69, 88, 90, 152, 153, 156, 157, 160, 163, 170-174
  spontaneous generation, 91, 92
Ark, species in, 30
"Artistic Nature," 75, 78, 175
Astronomy, 127
Athanasius, St., 47, 48, 69
Augustine, St.:
  an allegorical sense of Genesis, 16
  and St. Gregory of Nyssa, 65, 81, 82, 86
  angelic knowledge, 150
  animation of heavenly bodies, 161-163
  creation of Eve, 89
  exegetical arguments of, 141 *et seq.*
  Hexameron, 24, 82, 83, 143
  inerrancy of Scripture, 8, 134
  Leo XIII on, 8, 16, 48, 131, 134
  life of, 80, 81
  nature of angels, 162
  on formation of light, 55, 56, 145
  on misinterpretations of Scripture, 62-64
  on mystical sense of Scripture, 52, 53
  on secondary causes, 45, 115-117, 149, 150
  on succession of days, 47 *et seq.*, 78, 82, 83, 141, 147, 155, 156
  Père Brucker on, 48
  rationes seminales, 68, 82, 83, 85, 90, 142, 146, 147
  spontaneous generation, 89, 90
  also pp. 10, 126, 127, 151, 153, 177

Averroes, 111, 163, 165, 168
Avicenna, 93, 156

Barbier on Napoleon, 13
Basil, St.:
  and St. Ephrem, 71
  on animation of heavenly bodies, 162
  spontaneous generation, 78, 93
  also pp. 54-59, 72, 77-79, 154
Batrachia of Carboniferous period, 33
Bible. See *Scripture*
Biblical Commission:
  assent due to its decrees, 17, 18, 23
  institution of, 17
  on Genesis i.-iii, 19, 21, 57, 138-140
  on Hexameron, 23, 24
  on history, 12, 19, 136
  on implicit quotations, 18, 135
  on Pentateuch, 19, 20, 137-138
Birds, 40, 83
Bon Roi Dagobert, 14
Bonaventure, St., 153-155, 158, 168, 169
Breath of life, 39
Brucker, Père:
  on Deluge, 45
  on "species," 26-28, 30-33, 42
  on succession of days, 46, 47, 61

Cajetan quoted, 119
Cambridge:
  centenary celebrations, 2, 176-7
  invitation from, 1, 64
  also p. 129
Cangiamila, 107
Carboniferous rocks, 33, 40
Cary's translation of Dante, 112
Catholics:
  Belgian, and Darwinian Celebration, 2
  English, and *ditto*, 2
Causality, Principle of. See under *Principle*
Causes:
  First cause, 27, 33, 43-46, 90, 91, 115, 116
  instrumental causes, 118-122, 124
  secondary causes, 6, 8, 27, 42, 45, 46, 105, 115-117, 149, 150, 168
Chestnut tree, 37
Chrysostom, St. John:
  on firmament, 36
  sermons of, 69
Cicero, 160
Classifications, 108-109
Clement of Alexandria, 69
Coal deposits, vegetation of, 36-38
Cœlentera, 113
Concordist interpretation of Genesis, 11, 24, 27, 32-41, 50
Concursus divinus, 102, 115-117, 121, 143, 147
Conservation, 102, 115-117, 143
Cormophytes, 125
Creation, 102, 116-117, 143, 146-147
Creationism, 4, 6, 101, 103
Crustacea, 123
Cryptogams, 36
Cuvier, 101, 176

Dante quoted, 110-112
Darwin, Charles:
  and Principle of Present Causes, 93
  Centenary, 1, 21, 64, 176-177
  "Descent of Man," 2
  not a heretic, 2, 126
  on evolution of species, 4, 105, 126
  on origin of life, 4-6, 93, 126 *et seq.*
  "Origin of Species," 1, 176
  also pp. 129, 175
Darwinism and religion, 62
Days:
  why six, 41

Days:
succession of, 46 *et seq.*, 78-80, 141, 147-149, 155
See also *Yôm, First Day, etc.*
Delattre, Père, 60
Deluge
and species, 30
cause of, 44, 45
Democritus, 75
Devonian strata :
fauna, 40
flora, 33
D'Halloy, D'Omalius, 101, 176
Dives, 149
Domestic varieties, 28, 30-32, 40, 41, 43
Dominican School. See under *Albert the Great*, etc.
D'Orbigny, Alcide, 101, 176
Dorlodot, Canon, 1, 116
Dryden, 14
Ecclesiasticus quoted, 70, 147, 148
Electrons, 175
Elohist document, 20
Embryo, human, etc., 102, 107, 109, 110, 112, 113, 117, 120, 124, 125. See also *Ovum.*
Embryology, 104
Energy, concept of, 171
Ephrem, St., 71
Epicureus, 75
Eternal creation, 152, 153
Eve, formation of, 89
Evolution:
and Scripture, 5, 6, 61, 62, 65, 146, 149, 150
and secondary causes, 6, 105 *et seq.*
Darwin's theory of, 4, 42, 65, 126 *et seq.*
inorganic, 174-175
other theories, 4, 42, 65, 95
Père Brucker on, 27
proofs of, 97 *et seq.*, 104 *et seq.*, 118
Exodus quoted, 58-60
Ezechiel, 29
FATHERS:
and Aristotle, 68, 96, 160
and evolution, 5, 66 *et seq.*
Fathers:
and interpretation of Scripture, 14-17, 22, 67, 132
and Plato, 88, 96, 160
on aim of Genesis, 31
on days of Genesis, 50, 51
on Divine interventions, 66
on influence of heavenly bodies, 90
on *rationes seminales*, 68. See also under *Rationes seminales*
unanimity of, 66
See also *Patristic argument*
Fern, 125
Fifth Day, work of, 36, 38-40, 83, 154
Fifth Œcumenical Council, 160
Fir trees, 37
Firmament, 35, 36, 56, 57, 145, 148. See also *Second Day*
First Day, work of, 34, 35
Fishes
in Mediterranean, 29
origin of, 104
also pp. 39, 40
Fixity of species, 5, 6
Fœtus. See *Embryo*
Force, concept of, 170, 171
Fossil forms, 42. See also under *Geology*
Fourth Day, work of, 35, 37, 38, 48, 49, 54-56
Franciscan School, 155. See also *Bonaventure, St.*
Frog, 124
Fruit, 37
Gallina, 125
Genesis :
aim of writer, 31
and allegory, 14, 16, 139
Concordist interpretation of, 11
documentary hypothesis, 20, 21
historical character of i.-iii., 19, 21, 138, 139, 146
Geology and evolution, 86, 87, 97-99, 103, 104, 127, 146
Gesenius' *Hebrew Dictionary*, 29

God's Power, Wisdom, and Will identical, 73
Veracity of, and Evolution, 98, 99
Gramineæ, 36
Gregoire, Canon, 3
Gregory of Nyssa, St.:
and Platonist physics, 73, 76
and Vision theory, 77
cosmogony of, 72 *et seq.*, 146, 174
on "artistic nature," 75, 76, 78
on creation of light, 55
on Democritus and Epicureus, 75
on identity of Divine Power, Wisdom, and Will, 73
on primitive impulse of creation, 74, 76, 79, 115, 117
on St. Basil, 67-69, 71, 77, 78
Gregory the Great, St., 134
Gymnosperms, 36, 37

HEART as centre of organic life, 110
Heavenly bodies:
animation of. See under *Angelic movers*
Aristotle's idea of their nature, 90, 153, 160
influence on sub-lunar bodies, 90-93, 153-157, 171, 173
Platonist idea of their nature, 90
Hebrews quoted, 153, 166, 167
Heredity, 4
Hexameron:
and Biblical Commission, 23, 24
and Priestly Code, 20
Cosmogony of, 25, 58, 145
vision theory of, 77
Hippolytus, St., 69
History in Scripture, Biblical Commission on, 12, 19, 136
allegory in, 13, 19
Hummelauer, Père von, 77

IMMEDIATE animation theory, 107
Inductive method, 104, 125, 159.
See also *Principle of induction*
Insects, 92, 124
Inspiration of Scripture:
and human author, 7-9, 133
and Revelation, 9, 10
and Vatican Council, 7, 8, 133
true theory of, 9
Interventions, Divine:
Fathers on, 66 *et seq.*, 79, 86, 143
postulated by Darwin, 4, 6, 106, 126 *et seq.*
scholastic doctors on, 88, 91, 152, 154, 173, 174
also pp. 94, 98-100, 102-105, 115, 117, 148
See also *Naturalism, Principle of Christian*
Isaias quoted, 99

JAHVIST document, 20, 57, 58, 145, 146
Java, 38
Jerome, St.:
Leo XIII on, 16
on animation of heavenly bodies, 160, 161
also p. 147
John Damascene, St., 68, 69, 162, 164, 167
John, St., 9, 10
Joshua, 163

LADEUZE, Mgr., 1, 3
Lamartine quoted, 129-130
Laminne, Mgr., 3, 99, 106
Lamy, Mgr., on species, 26, 28, 31, 33, 39
Larvæ of insects, 124
Lateran Council, Fourth, 148
Laws, Natural, 116, 117, 126
Leo XIII:
and "firmament," 35, 36, 56
and modern philosophy, 96
and St. Augustine, 8, 16, 48, 131, 134, 149
on History and Scripture, 12, 13

Leo XIII:
on Origen, 16
on Patristic arguments 14-16, 87, 88, 132
on Science and Scripture, 10-12, 23, 56, 131, 132
Providentissimus Deus, 7, 8, 131 *et seq*
Life:
Darwin and, 4, 6, 93
Nature of, 114,
origin of, 102, 110, 118, 126, 175
Light, creation of, 34, 35, 54, 55, 148
Louvain University:
Address from, 2, 176-177
and Inspiration of Scripture, 9
Organisation of, 1
Rectoral Council, 1, 3, 63
Luke, Gospel of, 9
Luther, 3
Lyell, Charles, 176

Machabees II quoted, 9
Mammals:
in Tertiary period, 33, 40
in Triassic strata, 33
See also under *Domestic varieties*
Man, creation of, 41, 85, 103-105, 154
St. Augustine on, 89, 142, 143
Mathematics, character of modern, 95
Matter, St. Bonaventure's idea of, 154
Mesozoic period, 40
system, 33
Messianic prophecies, 61
Metamorphosis, 123
Metaphysics and science, 95
Miracles:
and Natural Order, 101-104
and Supernatural Order, 103
Moses:
and Natural Science, 11, 23, 27, 39, 42, 77
and Pentateuch, 19-21

Napoleon, Barbier on, 13
Natural Laws. See under *Laws*
Natural Order, 102-104, 115-117
Natural Selection, 4, 176
Naturalism, Principle of Christian:
in St. Thomas, 55, 159, 173
in Scholastics, 87, 159, 172-173
in Suarez, 172
See also pp. 93, 94, 150, 171
Nebular hypothesis, 87, 127
Newton, 127, 129, 174, 176, 177
Noe, Ark of, and species, 30. See also *Deluge*

Origen:
and eternal creation, 70
and evolution, 69
Leo XIII on, 16
on angels, 160, 162
Père Brucker on, 47
Origin of Species, 1, 2
Ovum:
and succession of forms, 107
as instrument, 120, 121, 124
St. Augustine on, 83

Paleontology. See under *Geology*
Patristic argument, Leo XIII on, 14-16, 87, 88, 132
Paul, St., 10
Pentateuch:
Biblical Commission on, 19, 137, 138
Mosaic authorship of, 19, 20, 137, 138
Species in, 29
Perfections:
higher, do not contain lower, 114, 124
of being, 121-122
Permian:
epoch, 38, 40
system, 33, 40
Peter, Bishop of Sebaste, 71, 72, 77
Phædrus, 41
Philo, 147

Philosophy:
ancient meaning of, 67, 156
and evolution, 5
Christian, 96
See also under *Aristotle*, *Plato*, etc.
Pius X:
and Hexameron, 24
on Biblical Commission, 17
Plants, origin of, 91, 100, 144, 146, 156. See also under *vegetable*
Platonist:
philosophy, 88, 96
physics, 73, 76, 88, 90, 160-162
Porphyry, tree of, 107
Pozzi on *species*, 26, 28
Priestly Code in *Genesis*
and fruit trees, 37
Cosmogony of, 25, 27
species in, 31
also p. 20
Principle:
of Causality, 106, 113-115, 118, 122, 125, 126
of Induction, 98, 99, 104
of Present Causes, 93, 177
of Sufficient Reason, 106, 122, 123
Prothallium, 125
Providentissimus Deus, 7, 8, 131 *et seq.*
Psalms referred to, 35-37, 128, 153, 177
Purpura, 92

Rationes seminales:
and St. Augustine, 68, 82, 83, 85, 90, 118, 120, 125, 142, 143, 146, 147
and St. Bonaventure, 154, 155
and St. Gregory of Nyssa, 74, 120, 146
See also pp. 115, 119, 121-125, 127
Rayleigh, Lord, 2
Rectoral Council. See under Louvain
Reptiles, 33, 36, 39
Revelation, 104
and inspiration, 9, 10
Romanes quoted, 99
Romans, Epistle to, 129

SABBATH Day, 41, 58-60. See also Seventh Day
Sacculinæ, 123
Sacerdotal Code. See *Priestly Code*
Scepticism in sciences, 96, 98
Scholastic Doctors:
and Aristotle, 88
and evolution, 87 *et seq.*
Sciences:
aim of, 27, 28
and metaphysics, 95
and Scripture, 10-12, 23, 62-64
scepticism in, 96, 98
Scotus, 119
Scripture
allegorical sense of, 22
and evolution, 5, 6, 61, 62, 65, 146-150
and History, 12, 13, 23
and Natural Science, 10-12, 62-64, 131 *et seq.*, 149
God the author of, 7-9, 40, 131 *et seq.*
human author, 7-9, 131 *et seq.*
inerrancy of, 8, 13, 134
inspiration of, 7-9, 131 *et seq.*
Patristic interpretation of, 14-17, 22, 72, 131 *et seq.*
principles of exegesis, 7 *et seq.*, 131 *et seq.*
Sea-urchins, 89
Second Day, work of, 56-57. See also under *Firmament*
Secondary period, 36, 38, 39
Seminal reasons. See *rationes seminales*
Sense perception, 108, 109
Septuagint, 37, 49, 144, 147
Seventh Day, rest on, 46 *et seq.*, 59-61, 142-143, 146-148

Sixth Day, work of, 40, 41
Soul, creation of human, 102, 117, 143, 154
Species impressa, 122
Species, origin of:
  Darwin's view, 4, 28, 41
  meaning of, 26, 28-33, 40-42, 107
  origin of, by single couple, 104-105
  Père Brucker on, 26, 27, 32, 33
  See also pp. 100, 103, 114, 125, 127, 146, 147, 155
Spontaneous generation:
  Aristotle on, 91, 92, 158, 173
  in Albert the Great, 155-156
  in St. Augustine, 89, 90
  in St. Basil, 78
  in St. Bonaventure, 154
  St. Thomas on, 92, 93, 155, 158
Starch, formation of, 38, 145
Stars. See under *Angelic movers* and *Heavenly bodies*
Suarez, 172
Sub-kingdom as species, 107
Sufficient Reason, Principle of. See under *Principle*
Sun, formation of, 35, 37, 38, 48, 54-56, 148
Supernatural, notion of, 102, 103
  order, 117

Tablet, 2
Tadpole, 124
Tertiary period, mammals in, 33, 40
Tertullian, 69
Testaceans, 92
Thallophyte, 125
Theology:
  and evolution, 5
  positive, 5
  speculative, 5
Theophilus of Antioch, 69
Third Day, work of, 36, 37, 40, 91
Thomas Aquinas, St.:
  on angelic movers of heavenly bodies, 157, 158
  on creation of light, 34, 55
  on eternal creation, 152, 153
  on Fourth Day, 49
  on human embryo, 109, 110
  on influence of stars, 157, 158, 173
  on interpretation of Scripture, 15, 16, 72, 131, 132
  on secondary causes, 94 158, 173
  on spontaneous generation, 91-93, 155, 158, 159
  on succession of days, 48, 49, 52, 53
Time and God, 54
Transformism. See under *Evolution*
Trent, Council of, on Patristic interpretation of Scripture, 15
Triassic strata, 33

UNICELLULAR organisms, 105
VATICAN Council:
  and Patristic interpretation of Scripture, 15
  on Inspiration, 7, 8
  on object of creation, 99
Vegetable life and animal life, 107-109, 124
Vertebrae, 97, 104
Vision, phenomenon of, 122, 123
Vision theory of *Genesis*. See *Hummelauer*
Vulgate, 133, 144

WALNUT tree, 37
Whelks, 92
Will as instrument, 122
William of Auvergne, 163
Wisdom, Book of, 128

Yôm
  Concordists on, 52
  exegetes on, 50, 51, 141
  Fathers on, 50, 141
  meaning of, 24, 50, 140
  Père Brucker on, 46, 52

Printed in England

Date Due

4/13/56			
MAY 18	1966		
OCT	4 1968		

Library Bureau Cat. no. 1137

37398

BL
263
D711 51398
AUTHOR
Dorlodot, H. de
TITLE Darwinism and Catholic thought. v.1

DATE LOANED	BORROWER'S NAME	DATE RETURN
9/20/68	John Zerbel C.M.	
10-3-68	Renew	